FIG. 1

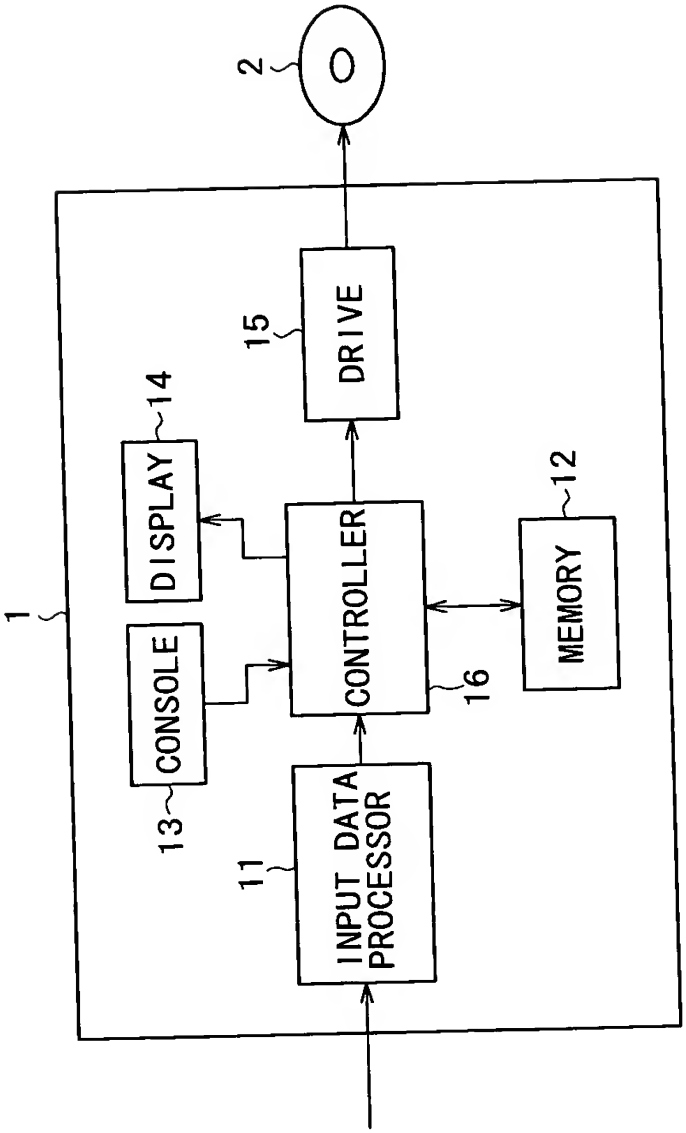

2
1
15
DRIVE
14
DISPLAY
CONSOLE
13
CONTROLLER
16
12
MEMORY
11
INPUT DATA PROCESSOR

FIG. 2

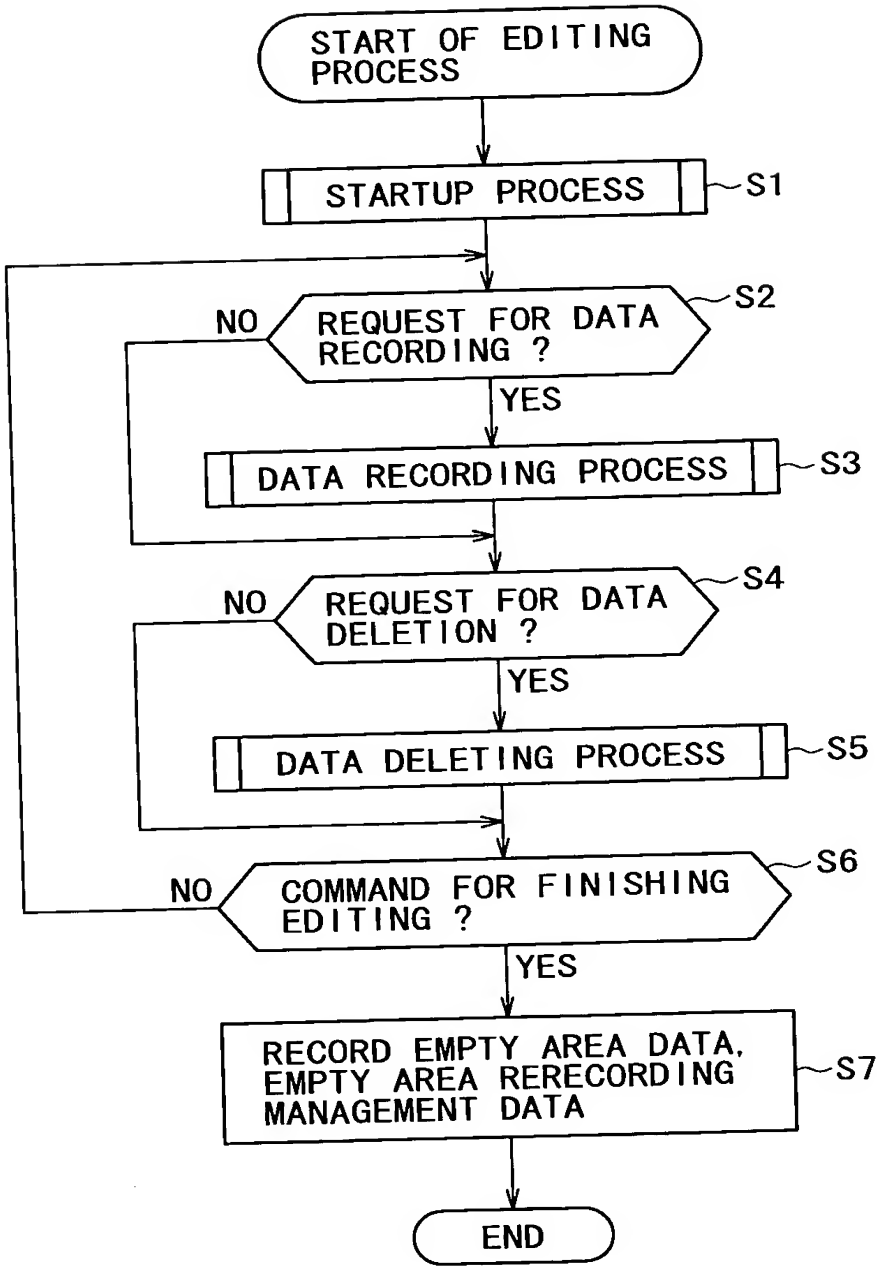

START OF EDITING PROCESS
STARTUP PROCESS
S1
NO
REQUEST FOR DATA RECORDING ?
S2
YES
DATA RECORDING PROCESS
S3
NO
REQUEST FOR DATA DELETION ?
S4
YES
DATA DELETING PROCESS
S5
NO
COMMAND FOR FINISHING EDITING ?
S6
YES
RECORD EMPTY AREA DATA, EMPTY AREA REERECORDING MANAGEMENT DATA
S7
END

FIG. 3

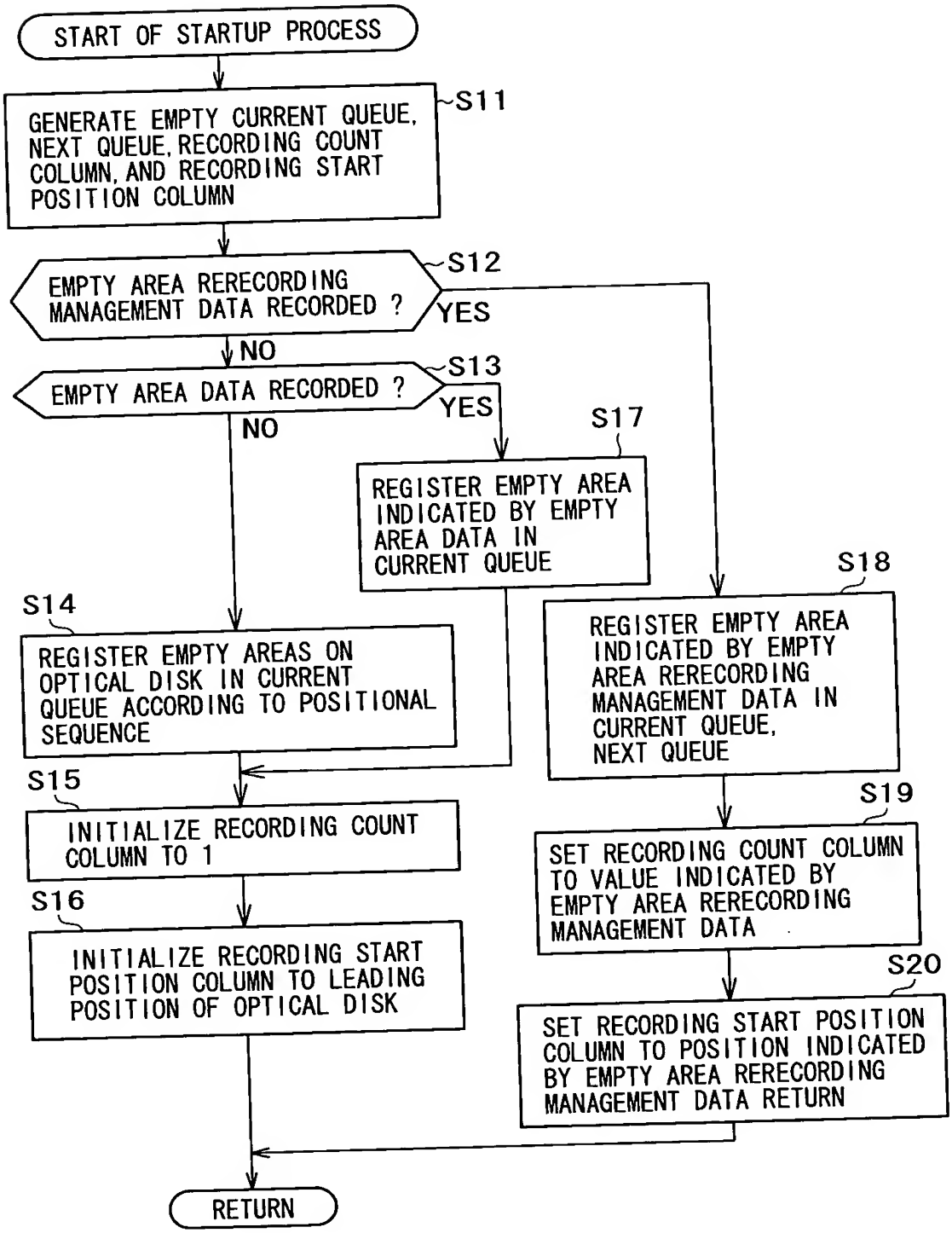

START OF STARTUP PROCESS
GENERATE EMPTY CURRENT QUEUE, NEXT QUEUE, RECORDING COUNT COLUMN, AND RECORDING START POSITION COLUMN
S11
EMPTY AREA RERECORDING MANAGEMENT DATA RECORDED ?
S12
YES
NO
EMPTY AREA DATA RECORDED ?
S13
YES
NO
S17
REGISTER EMPTY AREA INDICATED BY EMPTY AREA DATA IN CURRENT QUEUE
S18
REGISTER EMPTY AREA INDICATED BY EMPTY AREA RERECORDING MANAGEMENT DATA IN CURRENT QUEUE, NEXT QUEUE
S14
REGISTER EMPTY AREAS ON OPTICAL DISK IN CURRENT QUEUE ACCORDING TO POSITIONAL SEQUENCE
S15
INITIALIZE RECORDING COUNT COLUMN TO 1
S19
SET RECORDING COUNT COLUMN TO VALUE INDICATED BY EMPTY AREA RERECORDING MANAGEMENT DATA
S16
INITIALIZE RECORDING START POSITION COLUMN TO LEADING POSITION OF OPTICAL DISK
S20
SET RECORDING START POSITION COLUMN TO POSITION INDICATED BY EMPTY AREA RERECORDING MANAGEMENT DATA RETURN
RETURN

FIG. 4

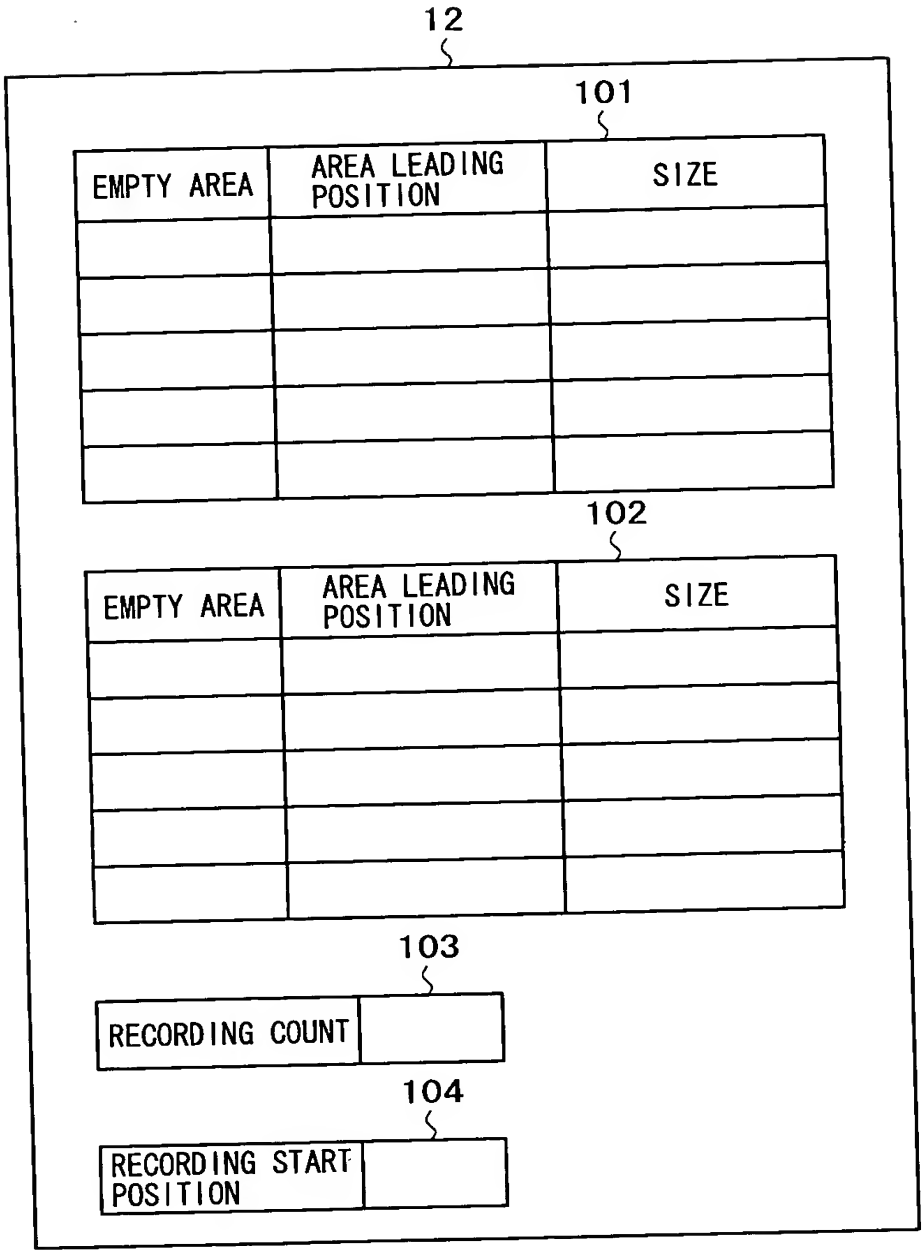

12
101
EMPTY AREA
AREA LEADING POSITION
SIZE
102
EMPTY AREA
AREA LEADING POSITION
SIZE
103
RECORDING COUNT
104
RECORDING START POSITION

FIG. 5

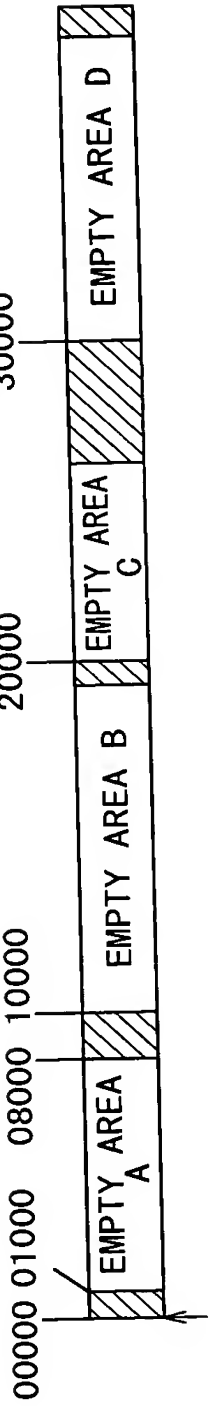

00000
01000
08000
10000
20000
30000
EMPTY AREA A
EMPTY AREA B
EMPTY AREA C
EMPTY AREA D

FIG. 6

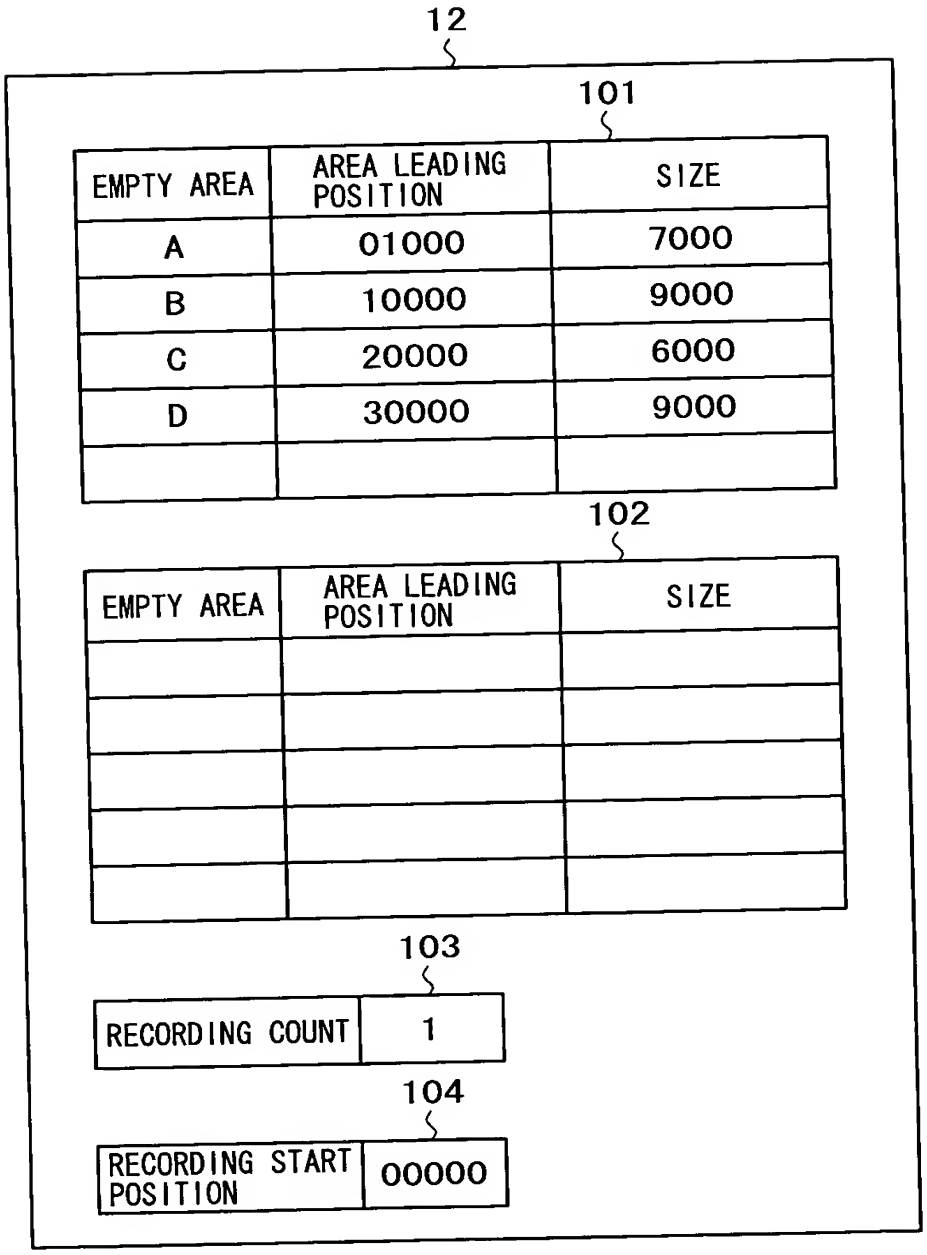

12
101
EMPTY AREA
AREA LEADING POSITION
SIZE
A
01000
7000
B
10000
9000
C
20000
6000
D
30000
9000
102
EMPTY AREA
AREA LEADING POSITION
SIZE
103
RECORDING COUNT
1
104
RECORDING START POSITION
00000

FIG. 7

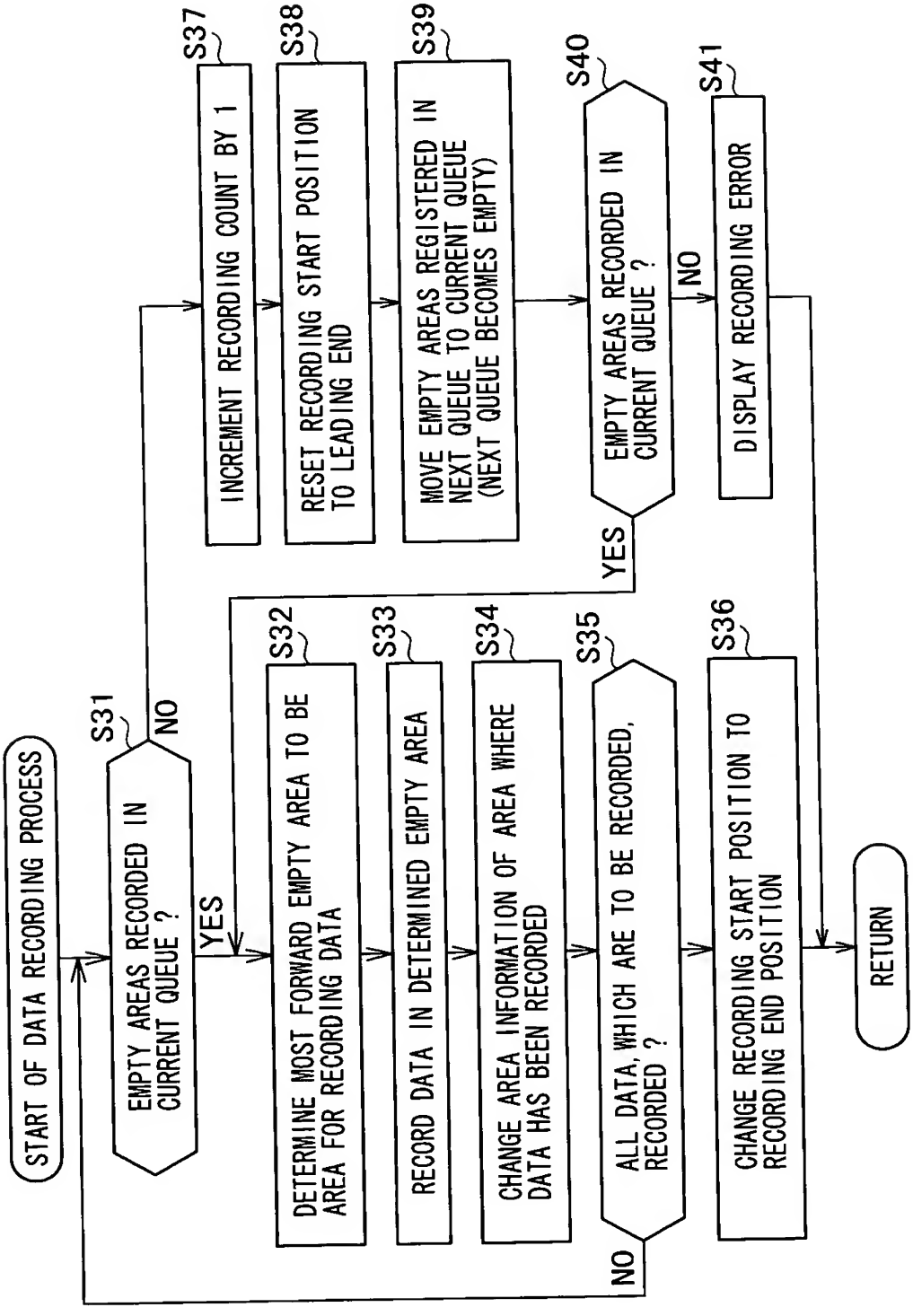

START OF DATA RECORDING PROCESS
S31
EMPTY AREAS RECORDED IN CURRENT QUEUE ?
NO
YES
S32
DETERMINE MOST FORWARD EMPTY AREA TO BE AREA FOR RECORDING DATA
S33
RECORD DATA IN DETERMINED EMPTY AREA
S34
CHANGE AREA INFORMATION OF AREA WHERE DATA HAS BEEN RECORDED
S35
ALL DATA, WHICH ARE TO BE RECORDED, RECORDED ?
NO
S36
CHANGE RECORDING START POSITION TO RECORDING END POSITION
RETURN
S37
INCREMENT RECORDING COUNT BY 1
S38
RESET RECORDING START POSITION TO LEADING END
S39
MOVE EMPTY AREAS REGISTERED IN NEXT QUEUE TO CURRENT QUEUE (NEXT QUEUE BECOMES EMPTY)
S40
EMPTY AREAS RECORDED IN CURRENT QUEUE ?
YES
NO
S41
DISPLAY RECORDING ERROR

FIG. 8

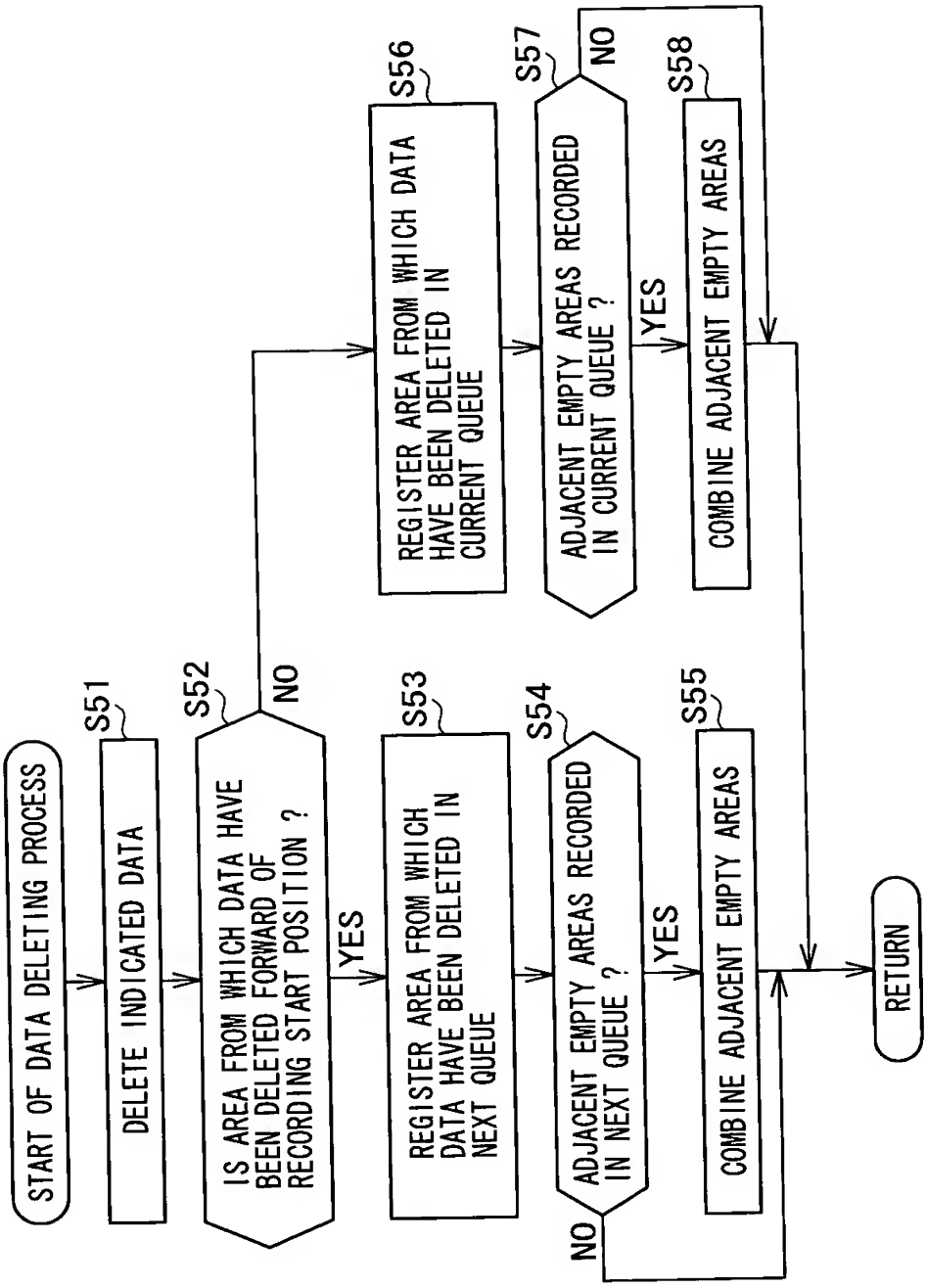

START OF DATA DELETING PROCESS
S51
DELETE INDICATED DATA
S52
IS AREA FROM WHICH DATA HAVE BEEN DELETED FORWARD OF RECORDING START POSITION ?
NO
YES
S53
REGISTER AREA FROM WHICH DATA HAVE BEEN DELETED IN NEXT QUEUE
S54
ADJACENT EMPTY AREAS RECORDED IN NEXT QUEUE ?
NO
YES
S55
COMBINE ADJACENT EMPTY AREAS
S56
REGISTER AREA FROM WHICH DATA HAVE BEEN DELETED IN CURRENT QUEUE
S57
ADJACENT EMPTY AREAS RECORDED IN CURRENT QUEUE ?
NO
YES
S58
COMBINE ADJACENT EMPTY AREAS
RETURN

FIG. 9

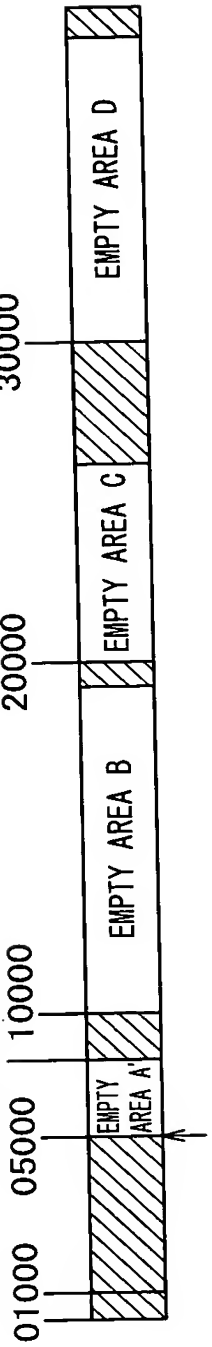

01000
05000
08000
10000
20000
30000
EMPTY AREA A'
EMPTY AREA B
EMPTY AREA C
EMPTY AREA D

FIG. 10

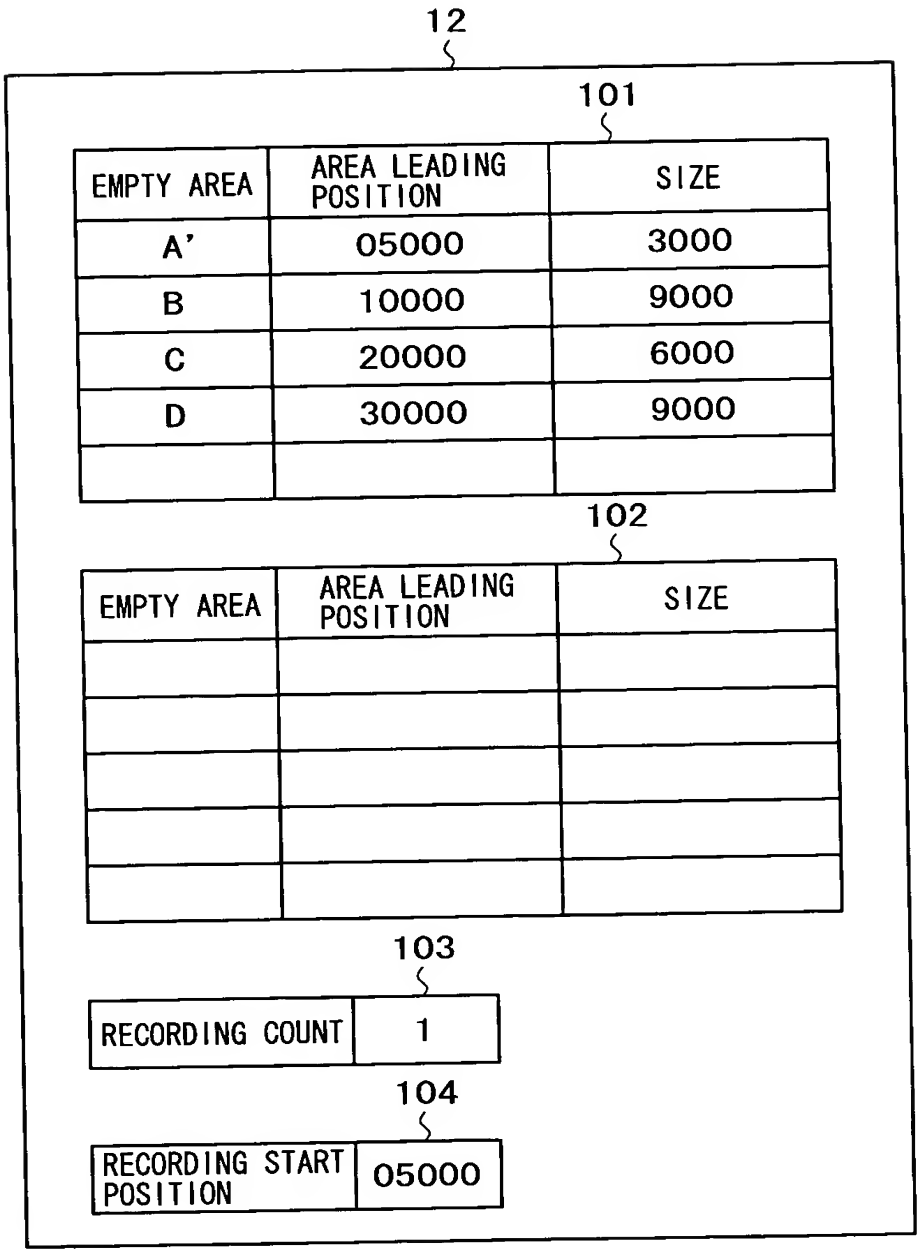

12
101
EMPTY AREA
AREA LEADING POSITION
SIZE
A'
05000
3000
B
10000
9000
C
20000
6000
D
30000
9000
102
EMPTY AREA
AREA LEADING POSITION
SIZE
103
RECORDING COUNT
1
104
RECORDING START POSITION
05000

FIG. 11

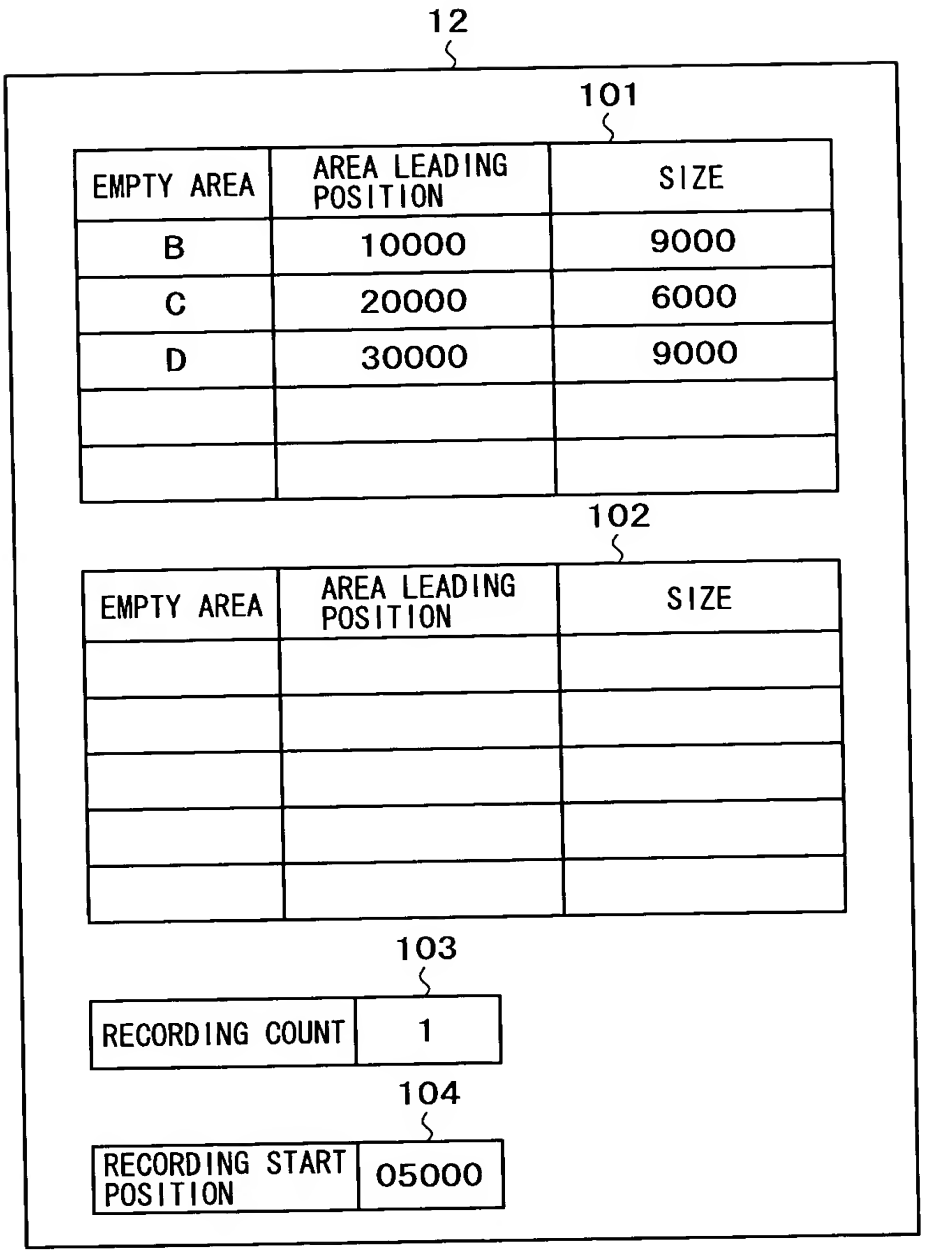

12
101
EMPTY AREA
AREA LEADING POSITION
SIZE
B
10000
9000
C
20000
6000
D
30000
9000
102
EMPTY AREA
AREA LEADING POSITION
SIZE
103
RECORDING COUNT
1
104
RECORDING START POSITION
05000

FIG. 12

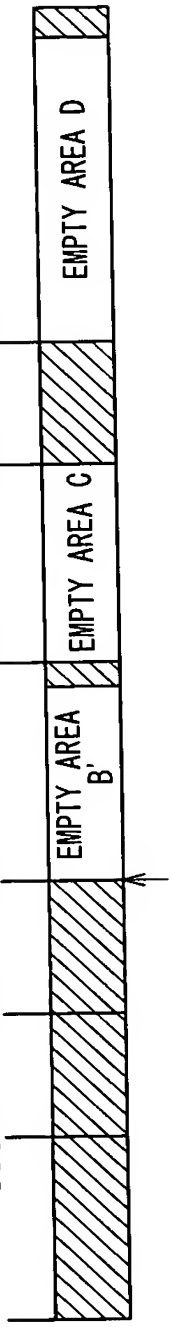

05000
10000
14000
20000
26000
30000
EMPTY AREA B'
EMPTY AREA C
EMPTY AREA D

FIG. 13

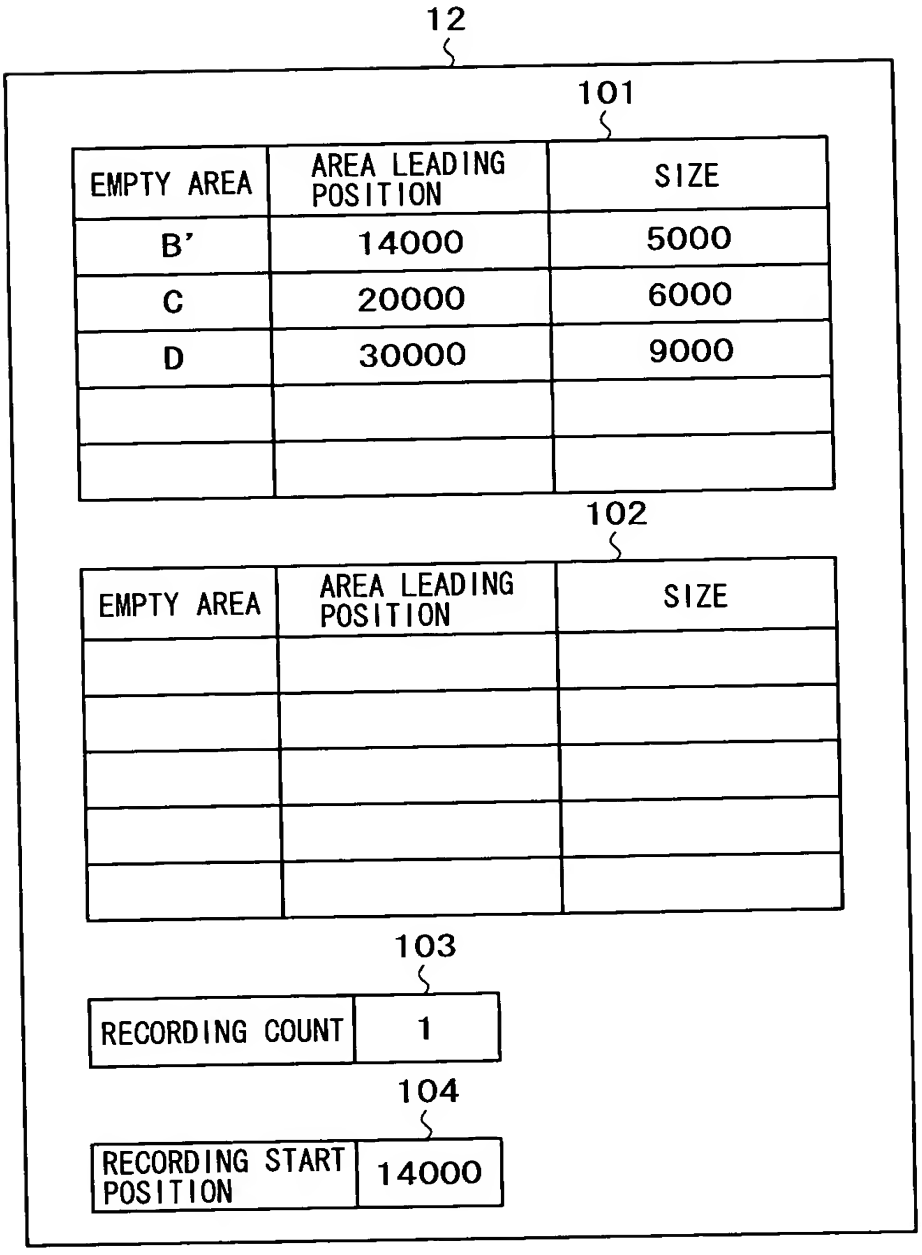

12
101
EMPTY AREA
AREA LEADING POSITION
SIZE
B'
14000
5000
C
20000
6000
D
30000
9000
102
EMPTY AREA
AREA LEADING POSITION
SIZE
103
RECORDING COUNT
1
104
RECORDING START POSITION
14000

FIG. 14

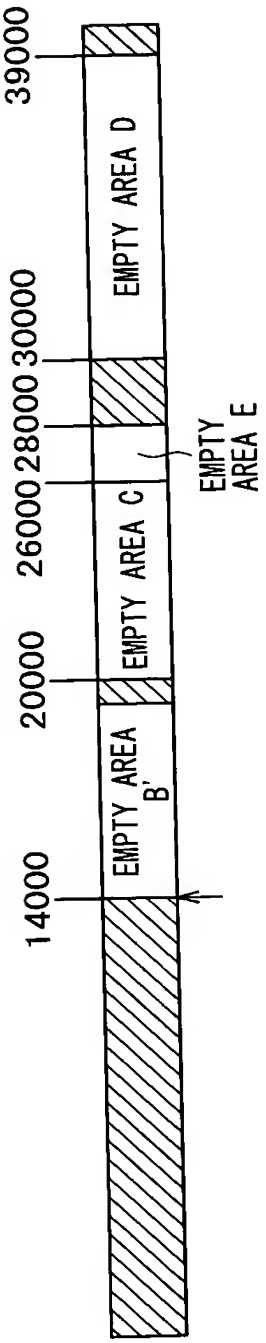

39000
30000
28000
26000
20000
14000
EMPTY AREA D
EMPTY AREA C
EMPTY AREA B'
EMPTY AREA E

FIG. 15

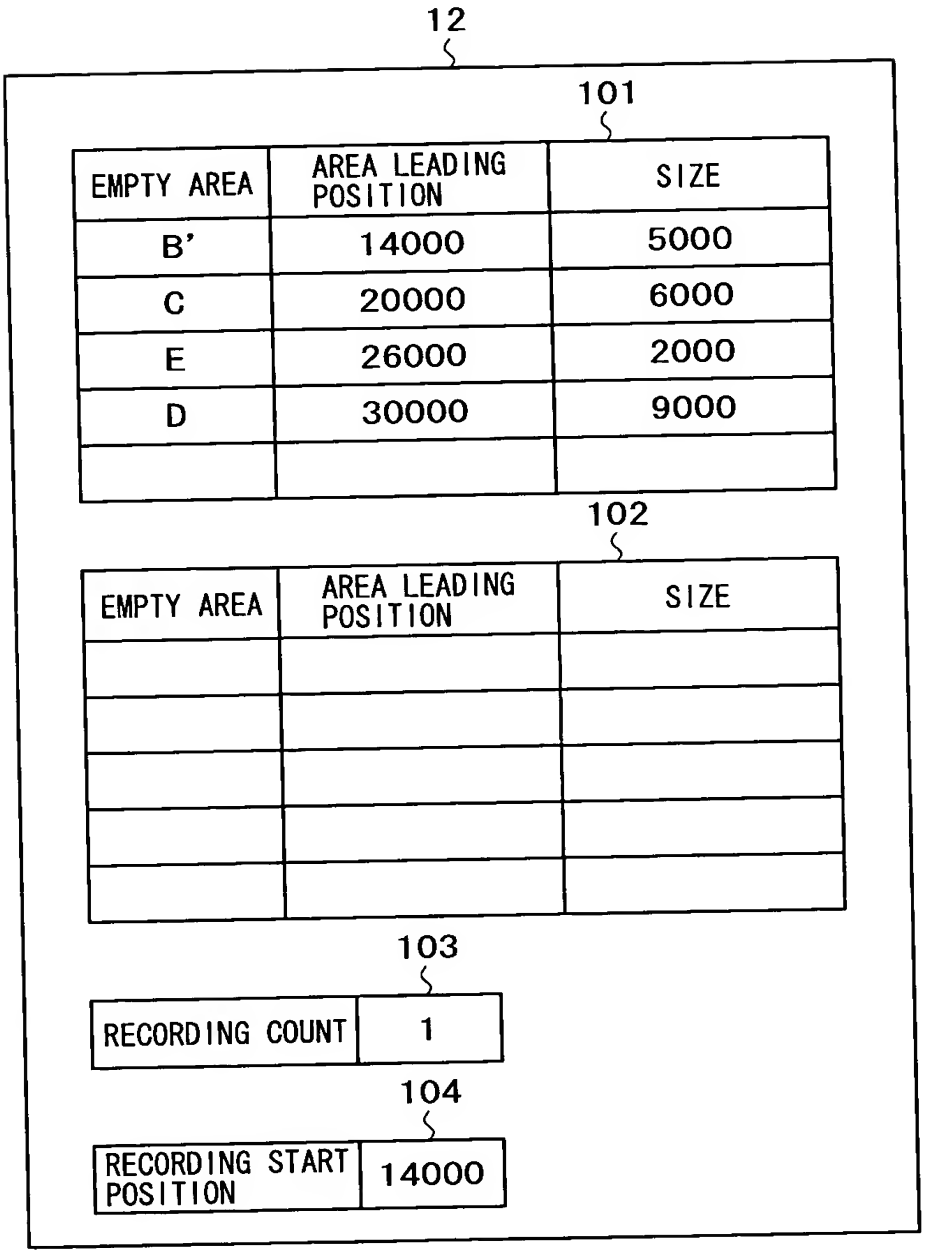

12
101
EMPTY AREA
AREA LEADING POSITION
SIZE
B'
14000
5000
C
20000
6000
E
26000
2000
D
30000
9000
102
EMPTY AREA
AREA LEADING POSITION
SIZE
103
RECORDING COUNT
1
104
RECORDING START POSITION
14000

FIG. 16

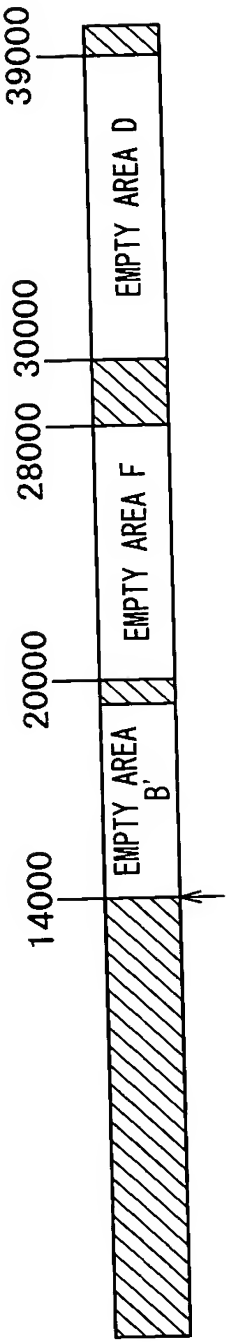

39000
30000
28000
20000
14000
EMPTY AREA D
EMPTY AREA F
EMPTY AREA B'

FIG. 17

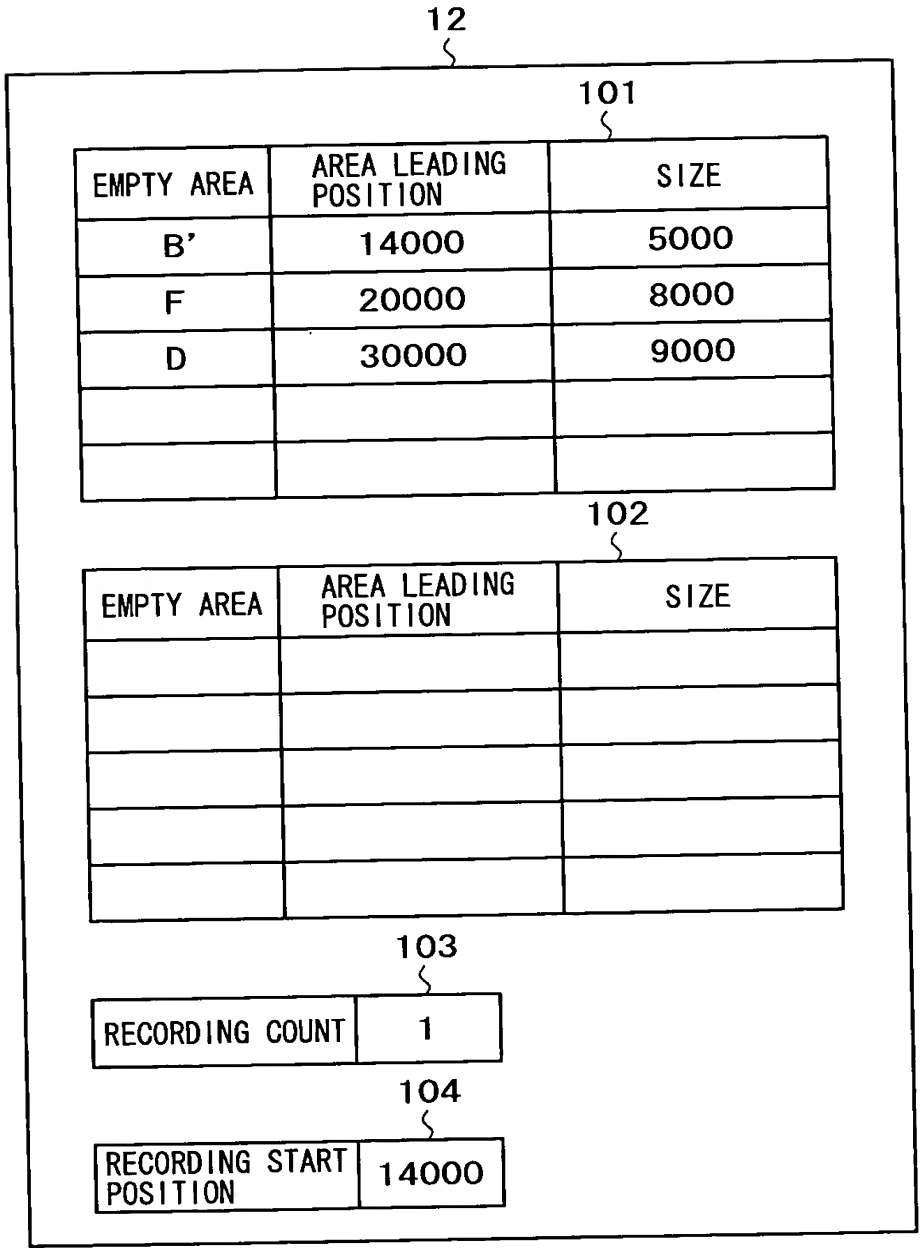

12
101
EMPTY AREA
AREA LEADING POSITION
SIZE
B'
14000
5000
F
20000
8000
D
30000
9000
102
EMPTY AREA
AREA LEADING POSITION
SIZE
103
RECORDING COUNT
1
104
RECORDING START POSITION
14000

FIG. 18

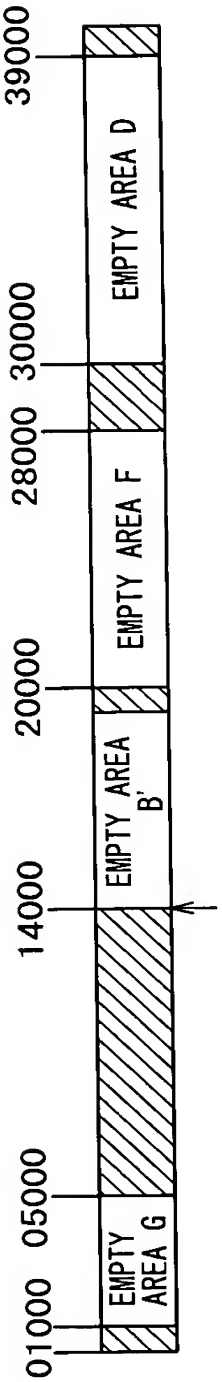

01000
05000
14000
20000
28000
30000
39000
EMPTY AREA G
EMPTY AREA B'
EMPTY AREA F
EMPTY AREA D

FIG. 19

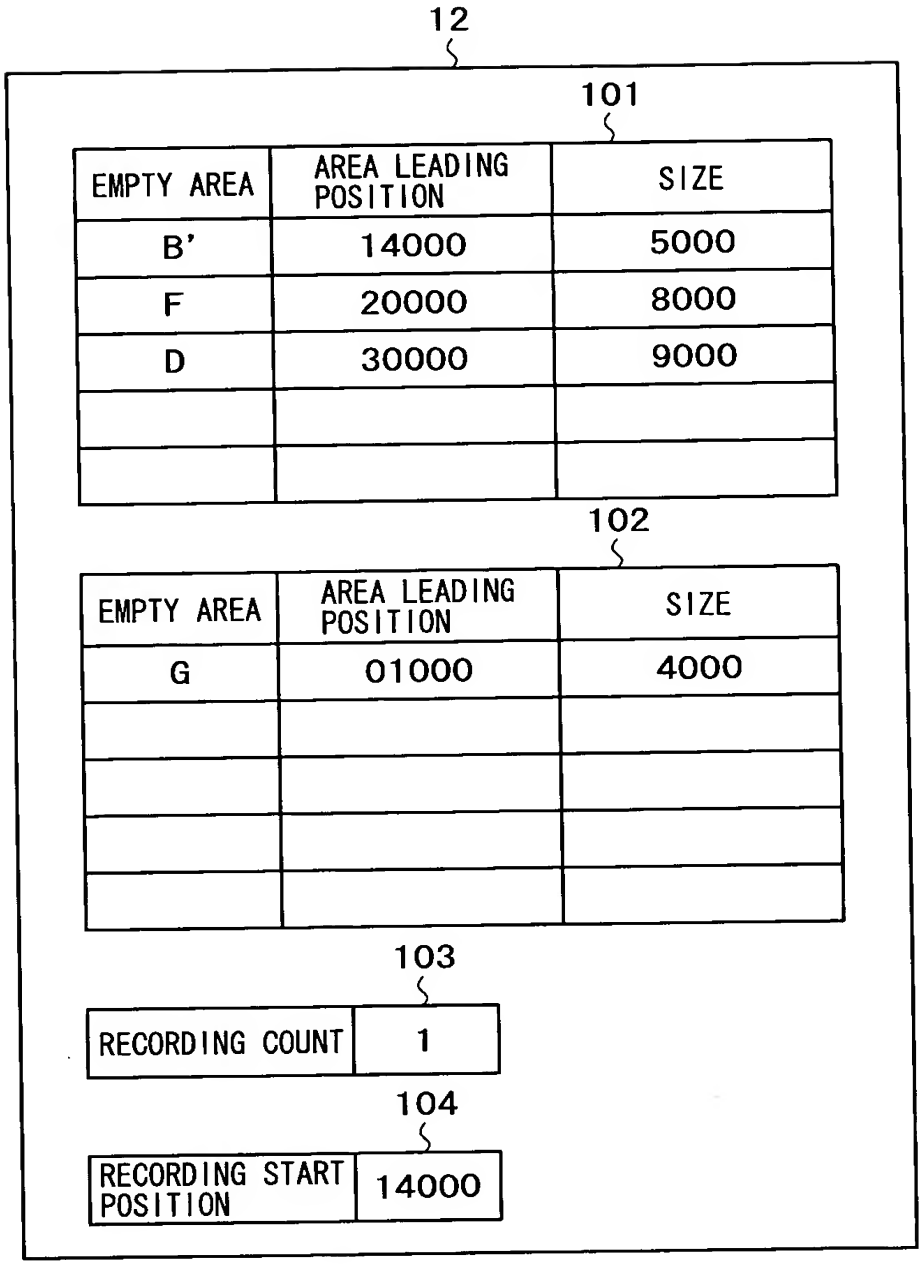

12
101
EMPTY AREA
AREA LEADING POSITION
SIZE
B'
14000
5000
F
20000
8000
D
30000
9000
102
EMPTY AREA
AREA LEADING POSITION
SIZE
G
01000
4000
103
RECORDING COUNT
1
104
RECORDING START POSITION
14000

FIG. 20

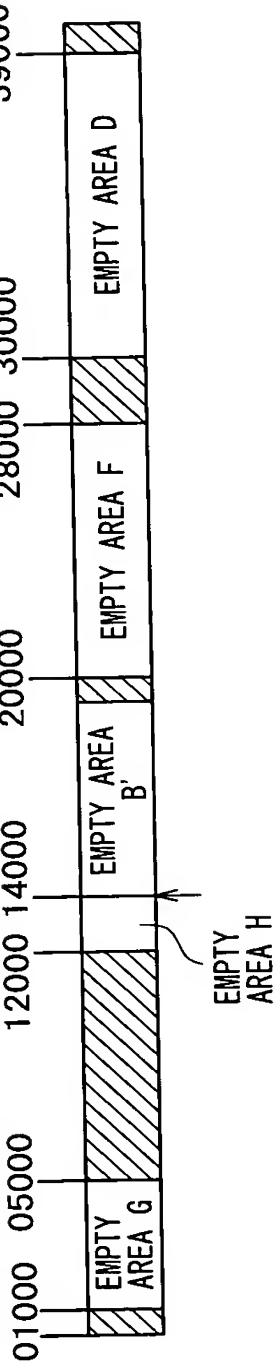

01000
05000
12000
14000
20000
28000
30000
39000
EMPTY AREA G
EMPTY AREA B'
EMPTY AREA F
EMPTY AREA D
EMPTY AREA H

FIG. 21

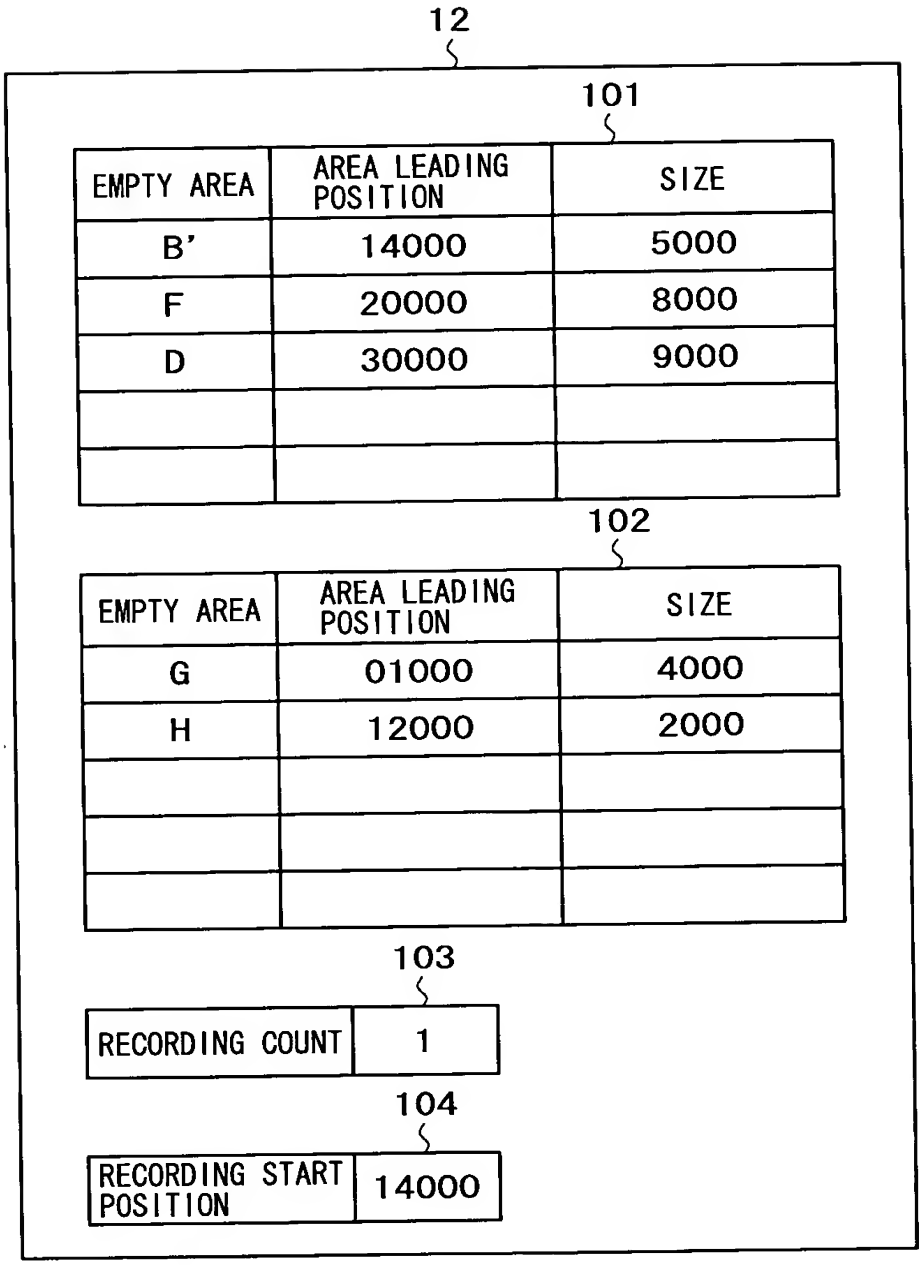

12
101
EMPTY AREA
AREA LEADING POSITION
SIZE
B'
14000
5000
F
20000
8000
D
30000
9000
102
EMPTY AREA
AREA LEADING POSITION
SIZE
G
01000
4000
H
12000
2000
103
RECORDING COUNT
1
104
RECORDING START POSITION
14000

FIG. 22

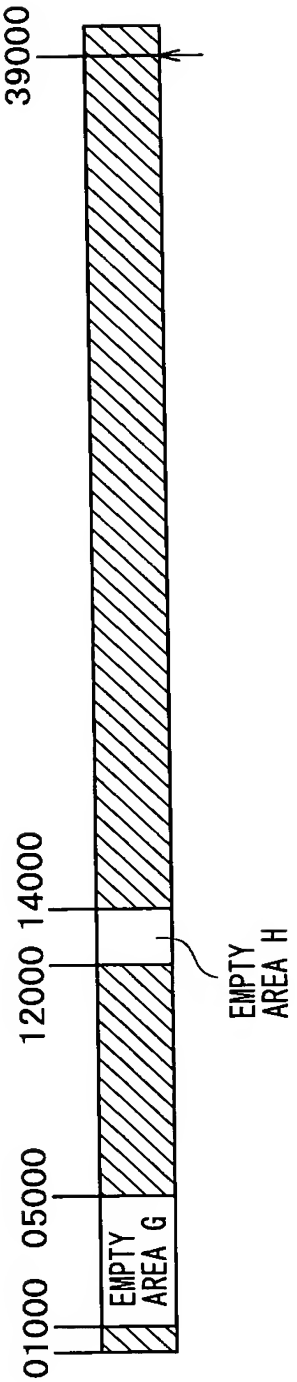


FIG. 23

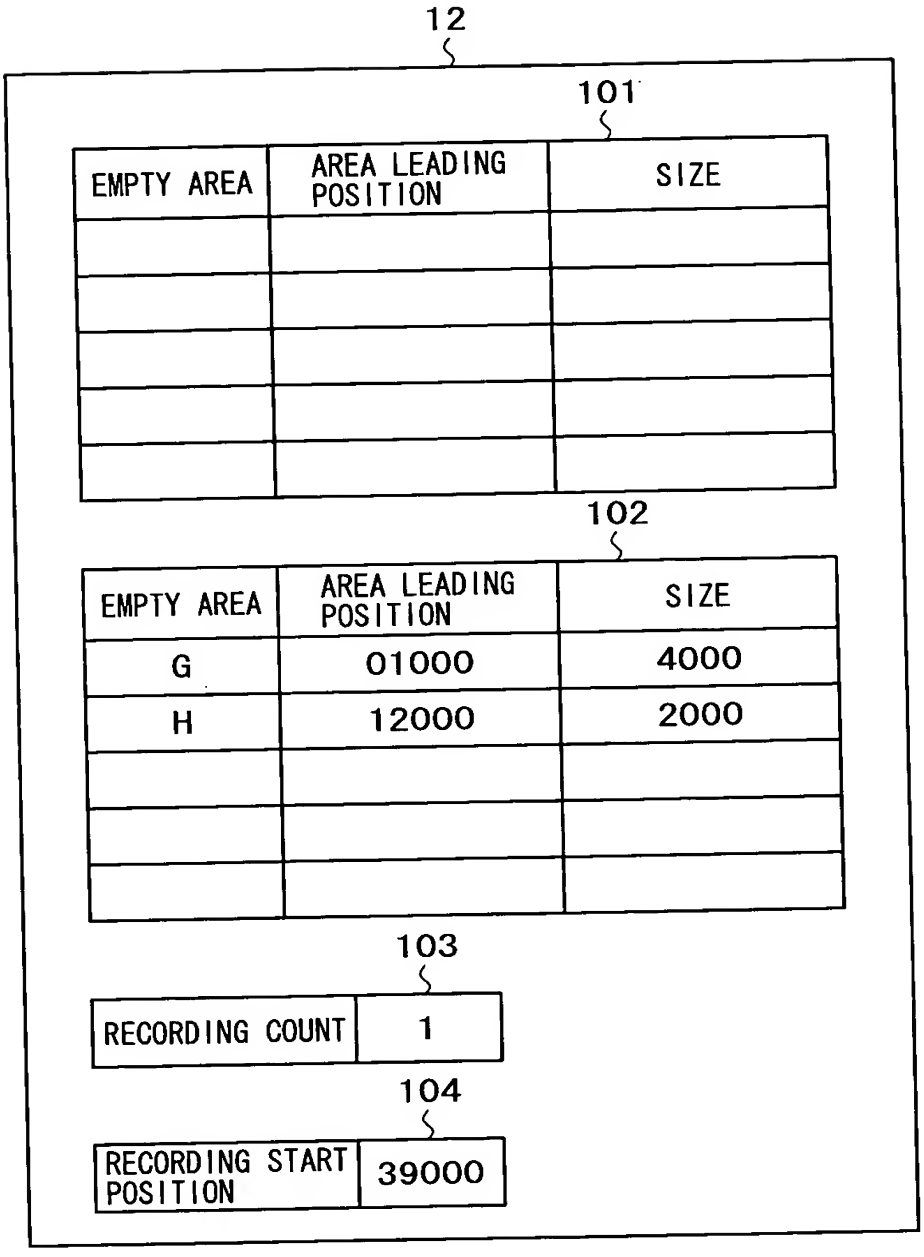

12
101
EMPTY AREA
AREA LEADING POSITION
SIZE
102
EMPTY AREA
AREA LEADING POSITION
SIZE
G
01000
4000
H
12000
2000
103
RECORDING COUNT
1
104
RECORDING START POSITION
39000

FIG. 24

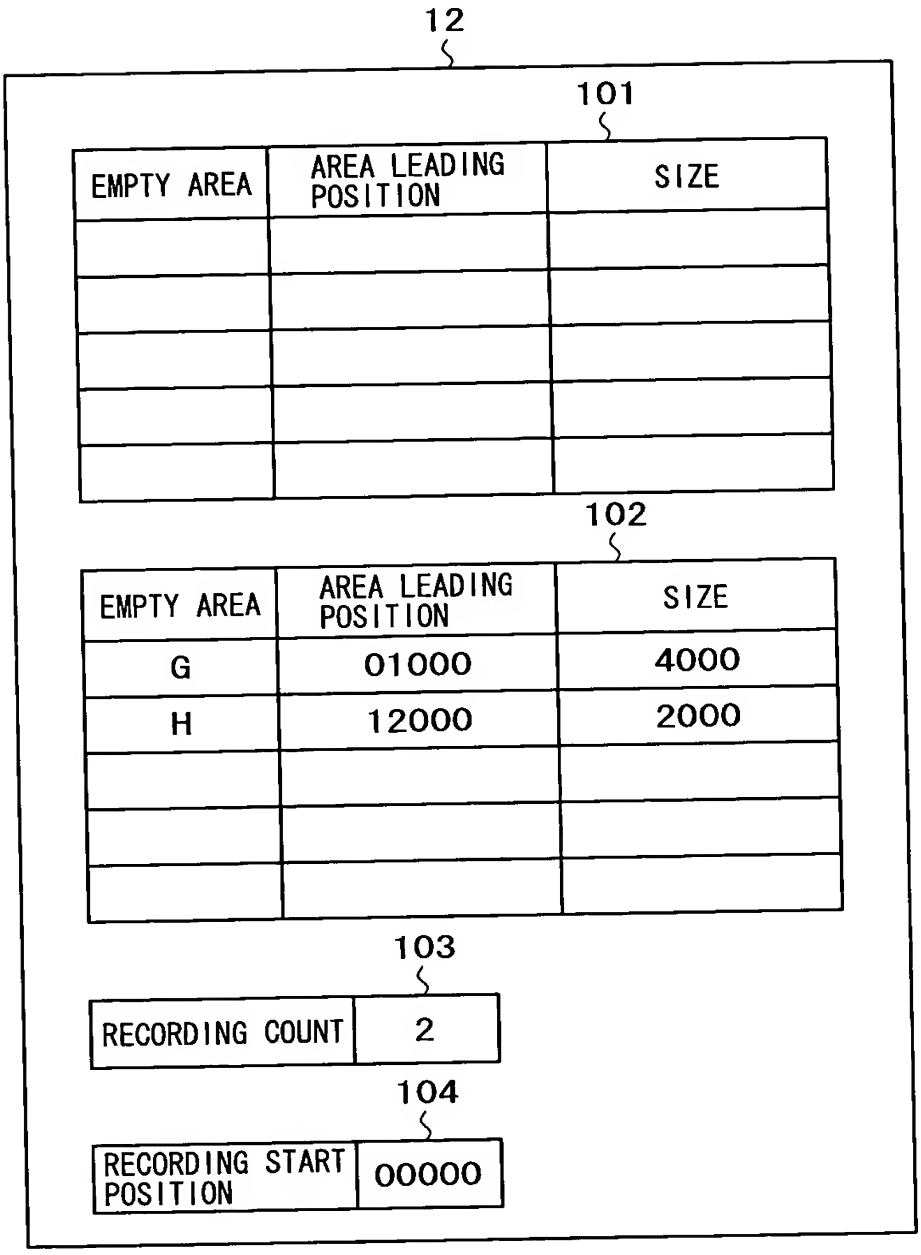

12
101
EMPTY AREA
AREA LEADING POSITION
SIZE
102
EMPTY AREA
AREA LEADING POSITION
SIZE
G
01000
4000
H
12000
2000
103
RECORDING COUNT
2
104
RECORDING START POSITION
00000

FIG. 25

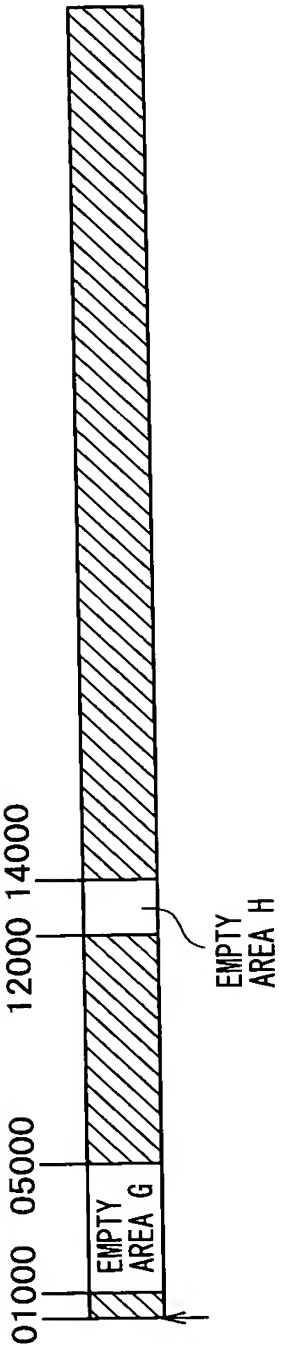


FIG. 26

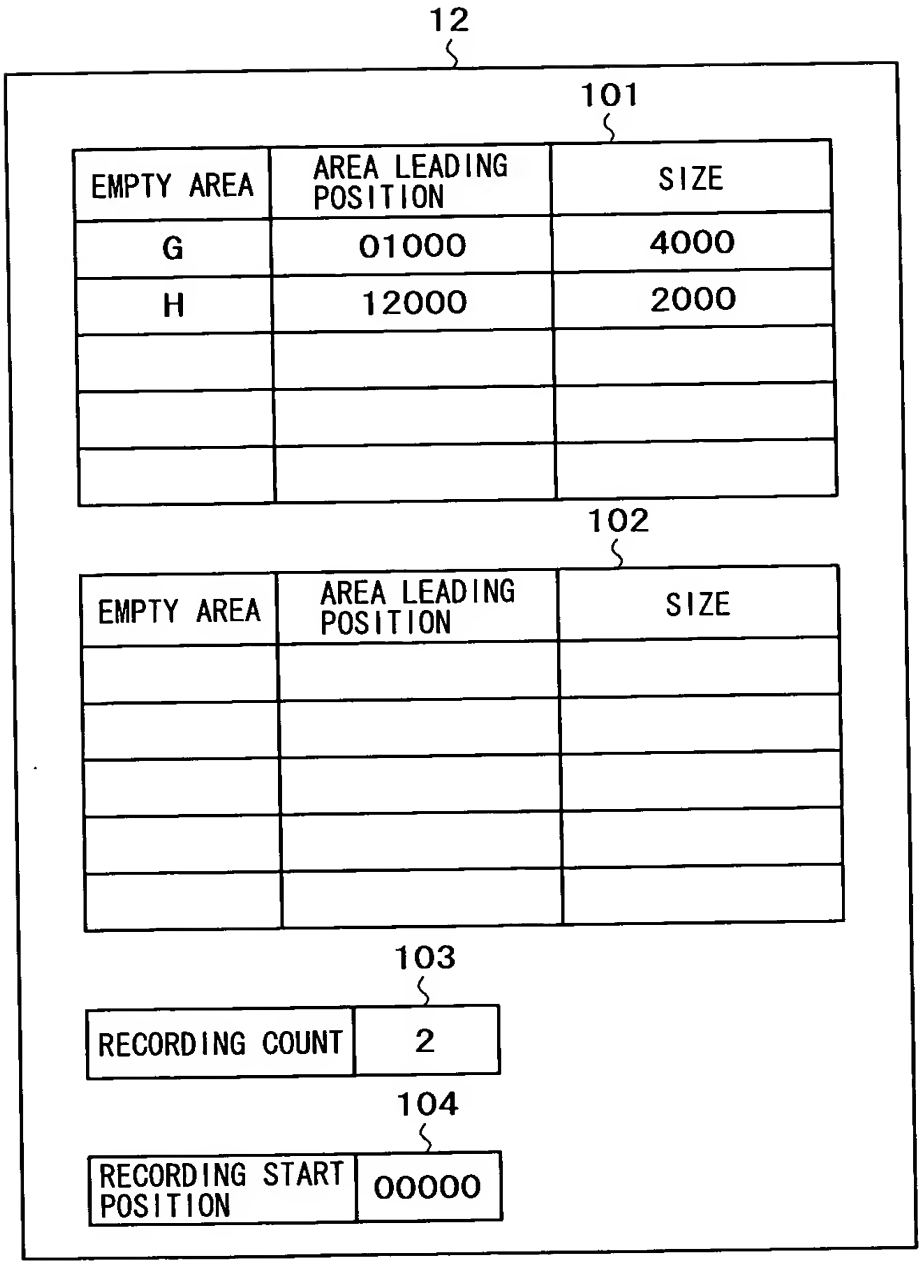

12
101
EMPTY AREA
AREA LEADING POSITION
SIZE
G
01000
4000
H
12000
2000
102
EMPTY AREA
AREA LEADING POSITION
SIZE
103
RECORDING COUNT
2
104
RECORDING START POSITION
00000

FIG. 27

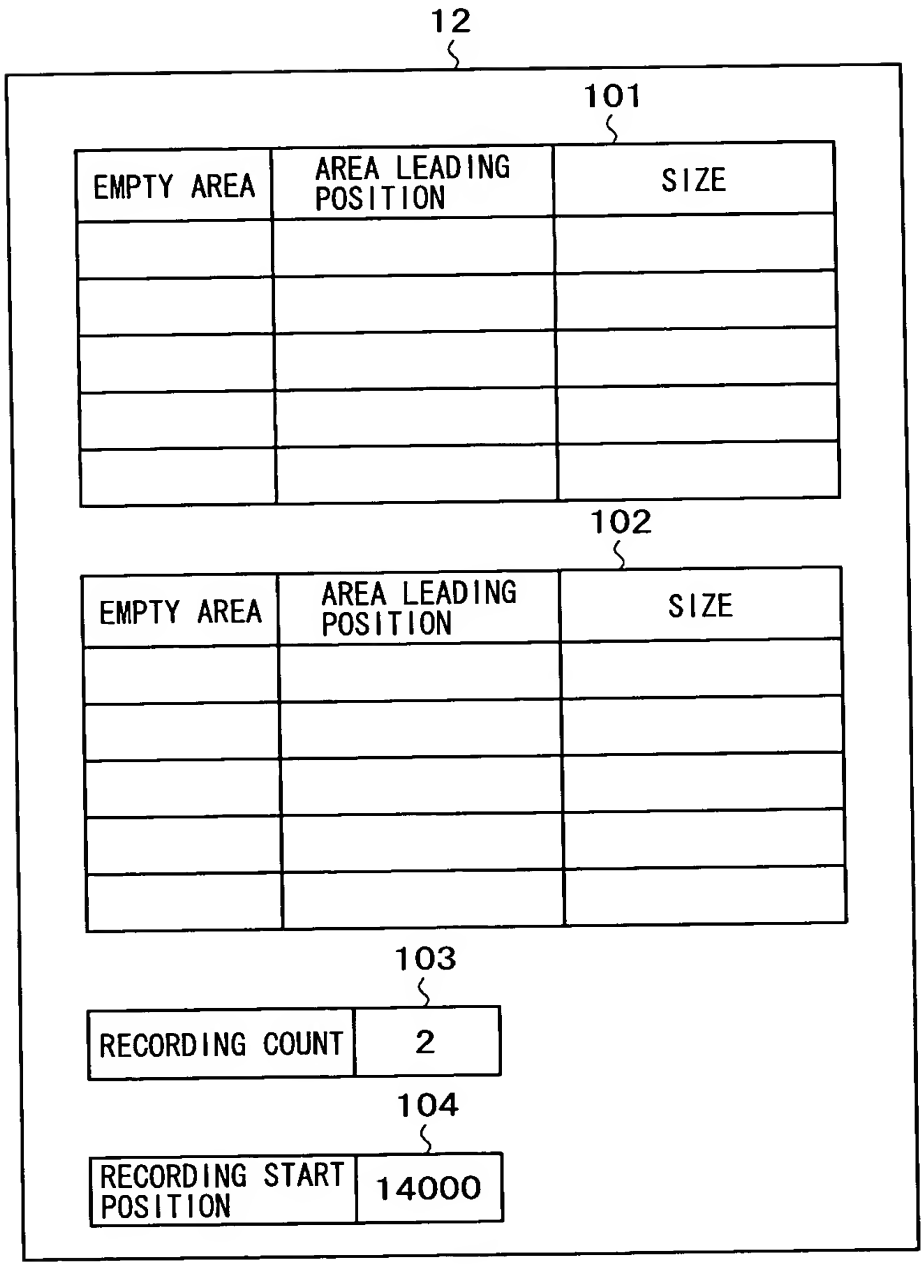

12
101
EMPTY AREA
AREA LEADING POSITION
SIZE
102
EMPTY AREA
AREA LEADING POSITION
SIZE
103
RECORDING COUNT
2
104
RECORDING START POSITION
14000

FIG. 28

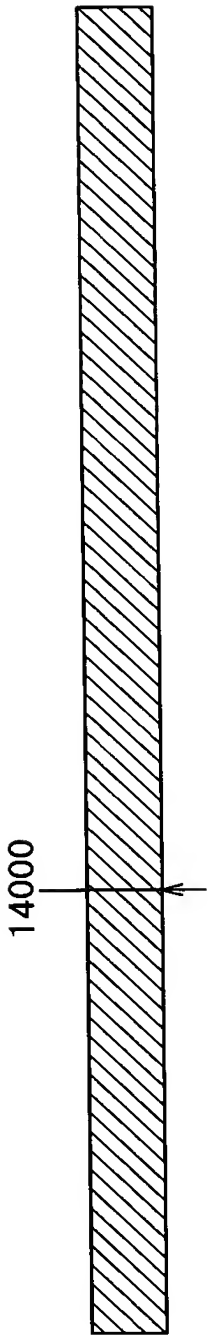


FIG. 29

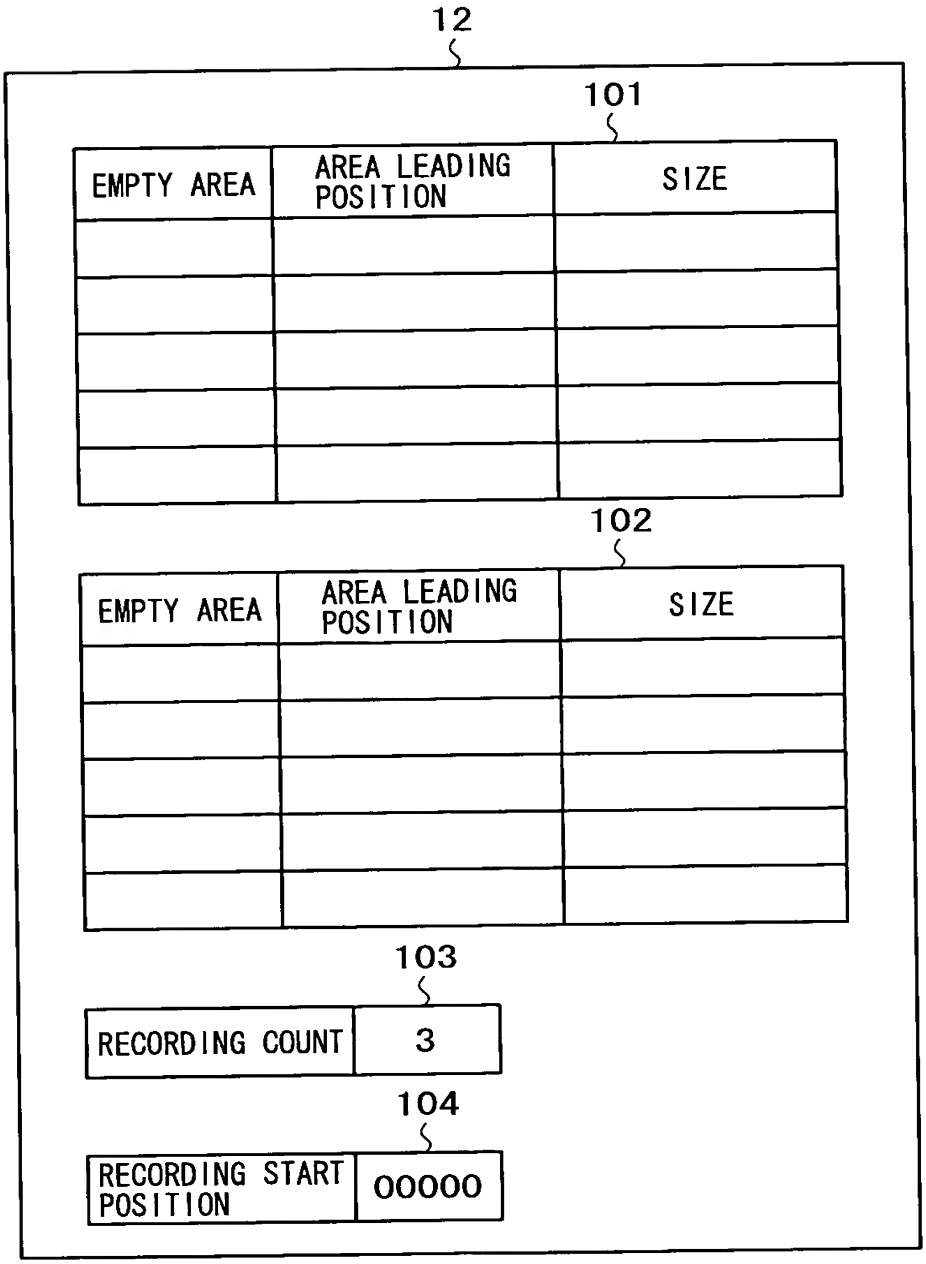

12
101
EMPTY AREA
AREA LEADING POSITION
SIZE
102
EMPTY AREA
AREA LEADING POSITION
SIZE
103
RECORDING COUNT
3
104
RECORDING START POSITION
00000

FIG. 30

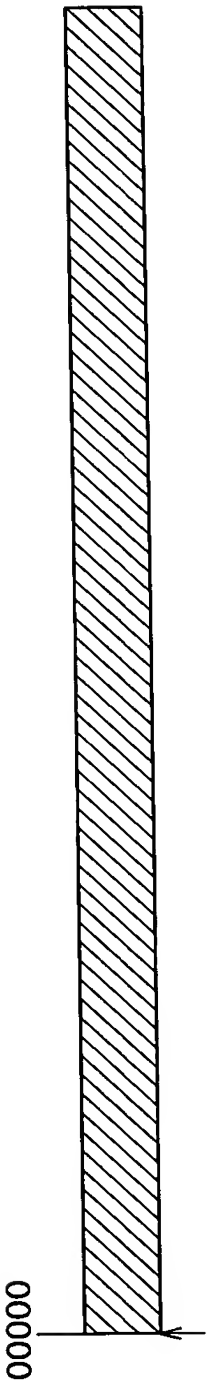


FIG. 31

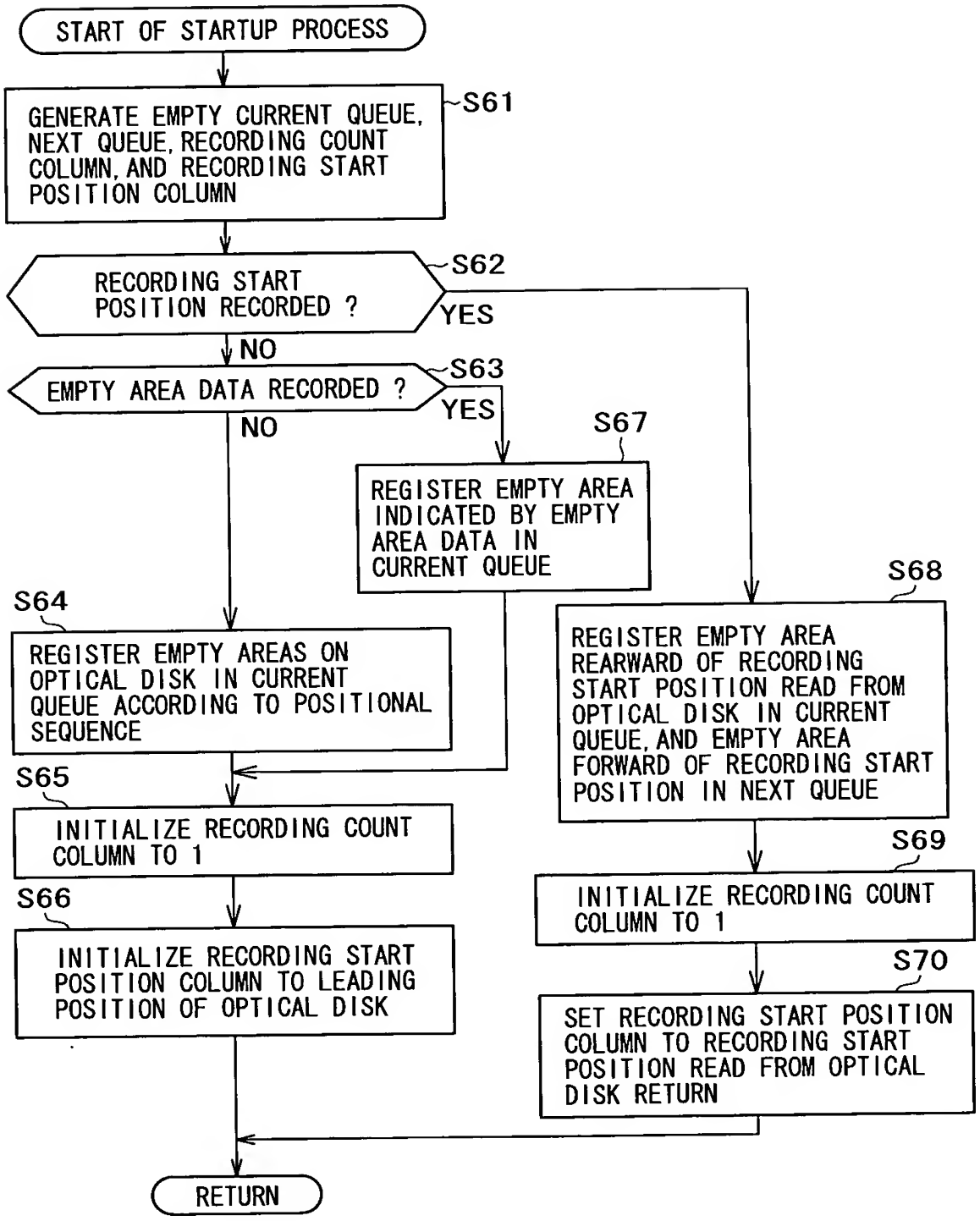

START OF STARTUP PROCESS
GENERATE EMPTY CURRENT QUEUE, NEXT QUEUE, RECORDING COUNT COLUMN, AND RECORDING START POSITION COLUMN
S61
RECORDING START POSITION RECORDED ?
S62
YES
NO
EMPTY AREA DATA RECORDED ?
S63
YES
NO
S67
REGISTER EMPTY AREA INDICATED BY EMPTY AREA DATA IN CURRENT QUEUE
S68
REGISTER EMPTY AREA REARWARD OF RECORDING START POSITION READ FROM OPTICAL DISK IN CURRENT QUEUE, AND EMPTY AREA FORWARD OF RECORDING START POSITION IN NEXT QUEUE
S64
REGISTER EMPTY AREAS ON OPTICAL DISK IN CURRENT QUEUE ACCORDING TO POSITIONAL SEQUENCE
S65
INITIALIZE RECORDING COUNT COLUMN TO 1
S69
INITIALIZE RECORDING COUNT COLUMN TO 1
S66
INITIALIZE RECORDING START POSITION COLUMN TO LEADING POSITION OF OPTICAL DISK
S70
SET RECORDING START POSITION COLUMN TO RECORDING START POSITION READ FROM OPTICAL DISK RETURN
RETURN

FIG. 32

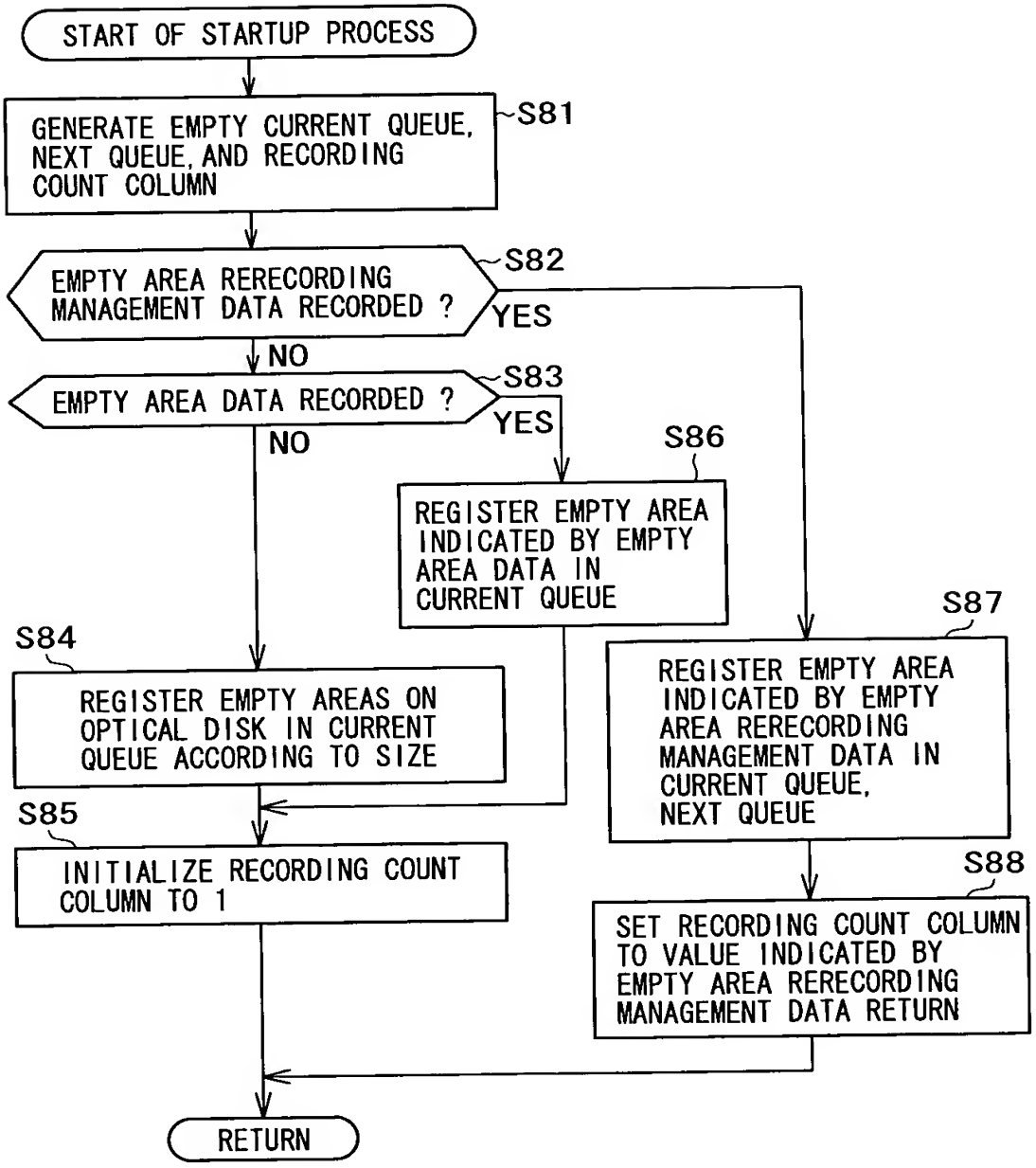

START OF STARTUP PROCESS
GENERATE EMPTY CURRENT QUEUE, NEXT QUEUE, AND RECORDING COUNT COLUMN
S81
EMPTY AREA RERECORDING MANAGEMENT DATA RECORDED ?
S82
YES
NO
EMPTY AREA DATA RECORDED ?
S83
YES
NO
S86
REGISTER EMPTY AREA INDICATED BY EMPTY AREA DATA IN CURRENT QUEUE
S87
REGISTER EMPTY AREA INDICATED BY EMPTY AREA RERECORDING MANAGEMENT DATA IN CURRENT QUEUE, NEXT QUEUE
S84
REGISTER EMPTY AREAS ON OPTICAL DISK IN CURRENT QUEUE ACCORDING TO SIZE
S85
INITIALIZE RECORDING COUNT COLUMN TO 1
S88
SET RECORDING COUNT COLUMN TO VALUE INDICATED BY EMPTY AREA RERECORDING MANAGEMENT DATA RETURN
RETURN

FIG. 33

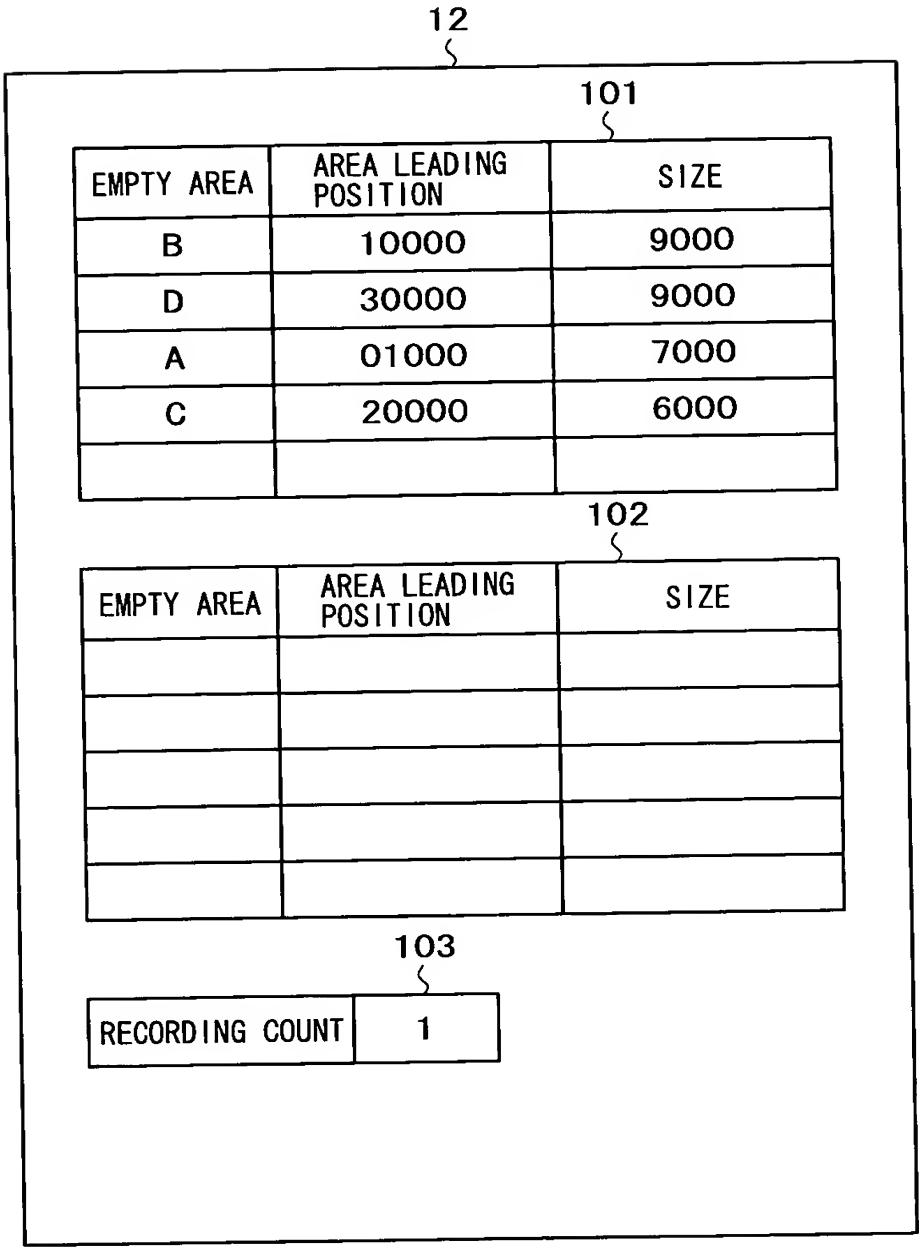

12
101
EMPTY AREA
AREA LEADING POSITION
SIZE
B
10000
9000
D
30000
9000
A
01000
7000
C
20000
6000
102
EMPTY AREA
AREA LEADING POSITION
SIZE
103
RECORDING COUNT
1

FIG. 34

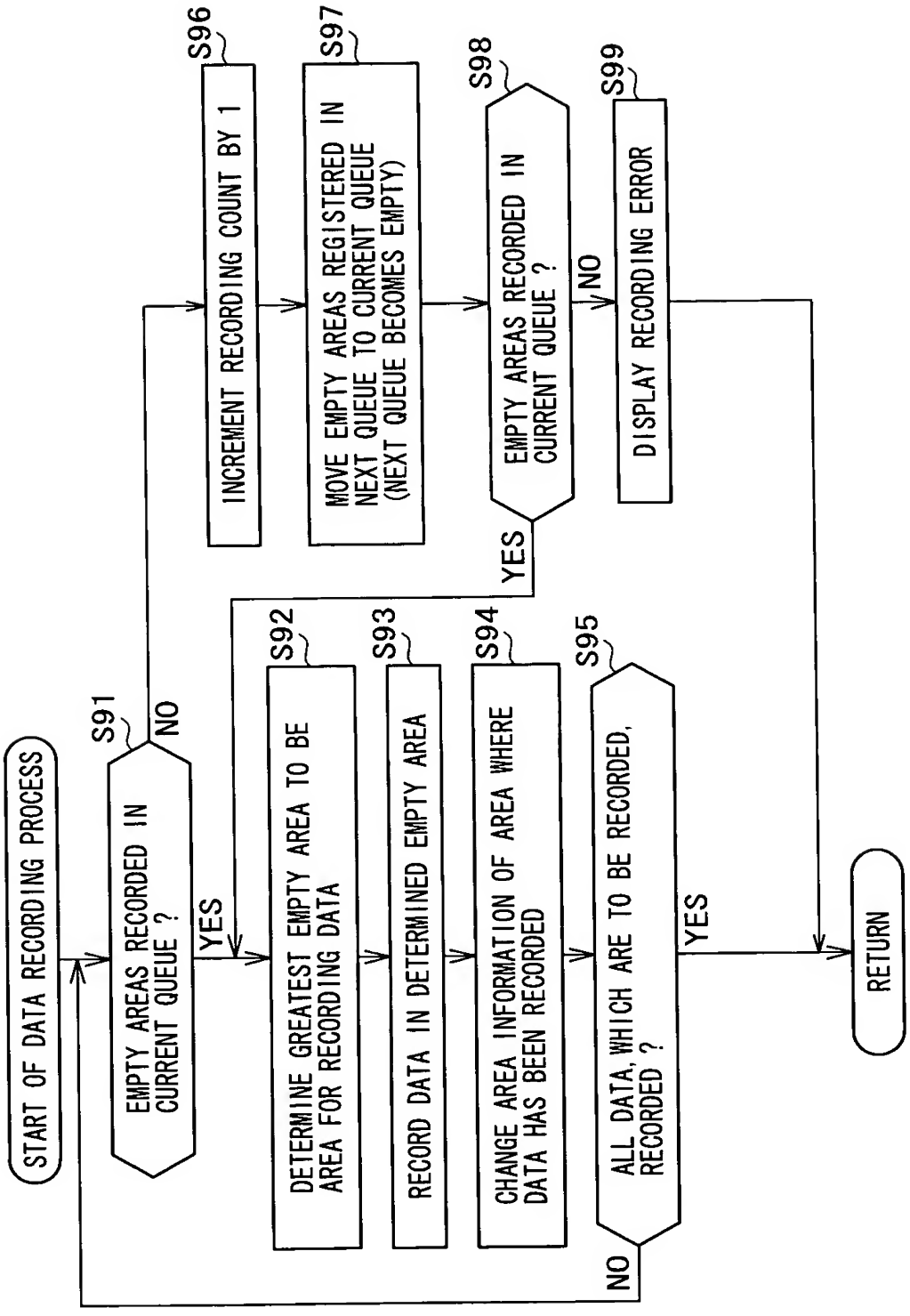

START OF DATA RECORDING PROCESS
S91
EMPTY AREAS RECORDED IN CURRENT QUEUE ?
NO
YES
S96
INCREMENT RECORDING COUNT BY 1
S97
MOVE EMPTY AREAS REGISTERED IN NEXT QUEUE TO CURRENT QUEUE (NEXT QUEUE BECOMES EMPTY)
S98
EMPTY AREAS RECORDED IN CURRENT QUEUE ?
NO
YES
S99
DISPLAY RECORDING ERROR
S92
DETERMINE GREATEST EMPTY AREA TO BE AREA FOR RECORDING DATA
S93
RECORD DATA IN DETERMINED EMPTY AREA
S94
CHANGE AREA INFORMATION OF AREA WHERE DATA HAS BEEN RECORDED
S95
ALL DATA, WHICH ARE TO BE RECORDED, RECORDED ?
NO
YES
RETURN

FIG. 35

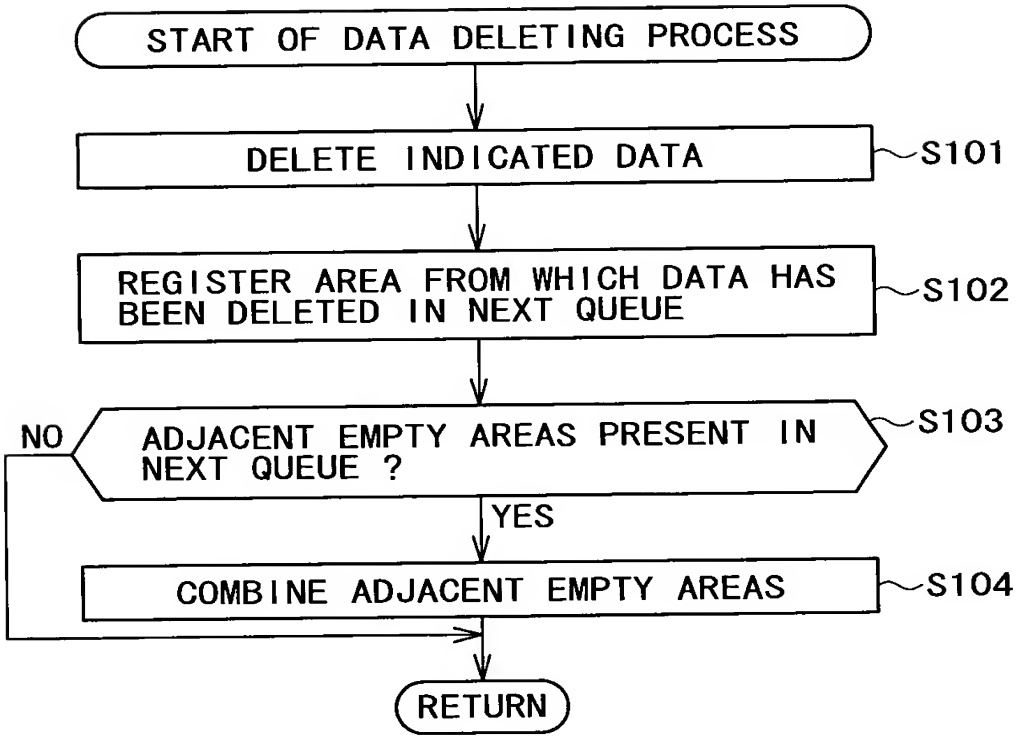

START OF DATA DELETING PROCESS
DELETE INDICATED DATA
S101
REGISTER AREA FROM WHICH DATA HAS BEEN DELETED IN NEXT QUEUE
S102
NO
ADJACENT EMPTY AREAS PRESENT IN NEXT QUEUE ?
S103
YES
COMBINE ADJACENT EMPTY AREAS
S104
RETURN

FIG. 36

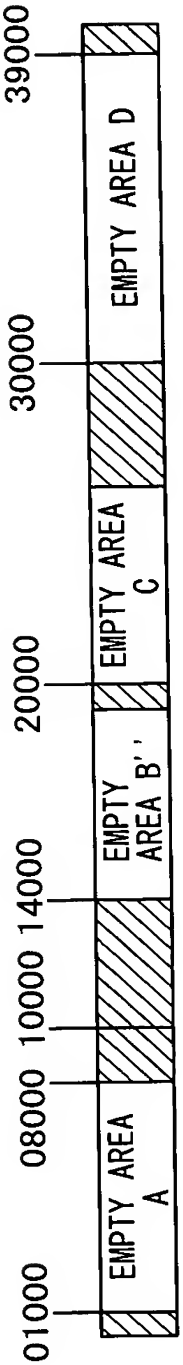

01000
08000
10000
14000
20000
30000
39000
EMPTY AREA A
EMPTY AREA B''
EMPTY AREA C
EMPTY AREA D

FIG. 37

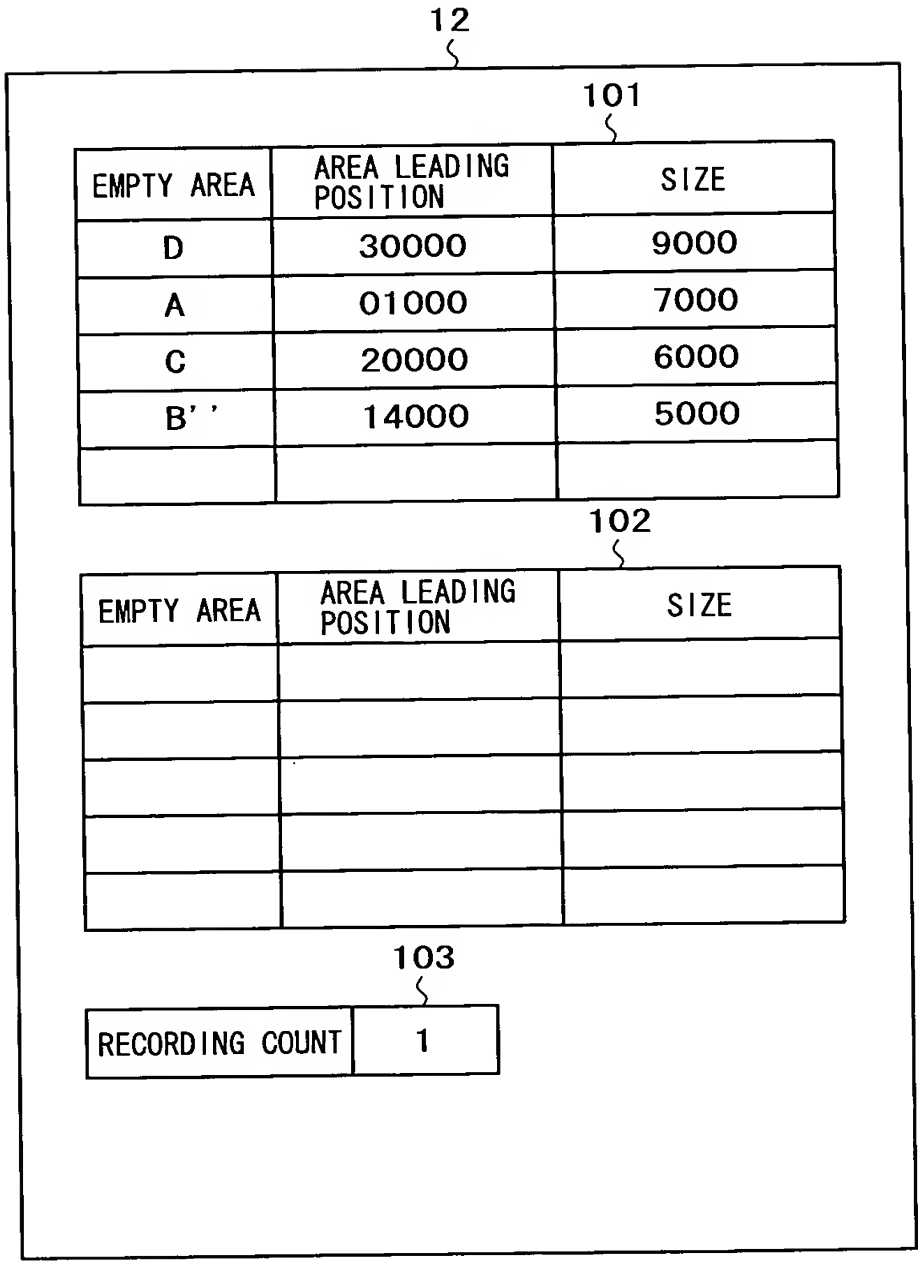

12
101
EMPTY AREA
AREA LEADING POSITION
SIZE
D
30000
9000
A
01000
7000
C
20000
6000
B''
14000
5000
102
EMPTY AREA
AREA LEADING POSITION
SIZE
103
RECORDING COUNT
1

FIG. 38

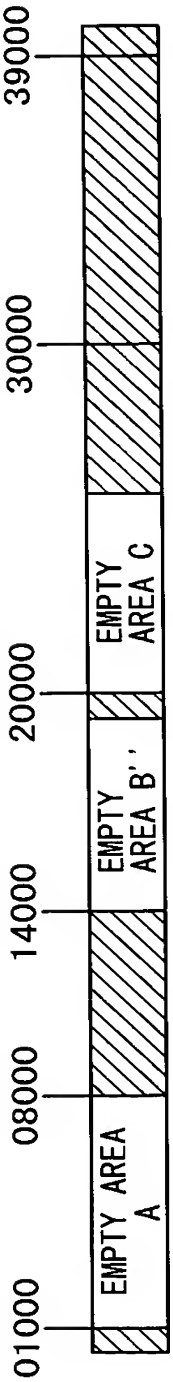

01000
08000
14000
20000
30000
39000
EMPTY AREA A
EMPTY AREA B''
EMPTY AREA C

FIG. 39

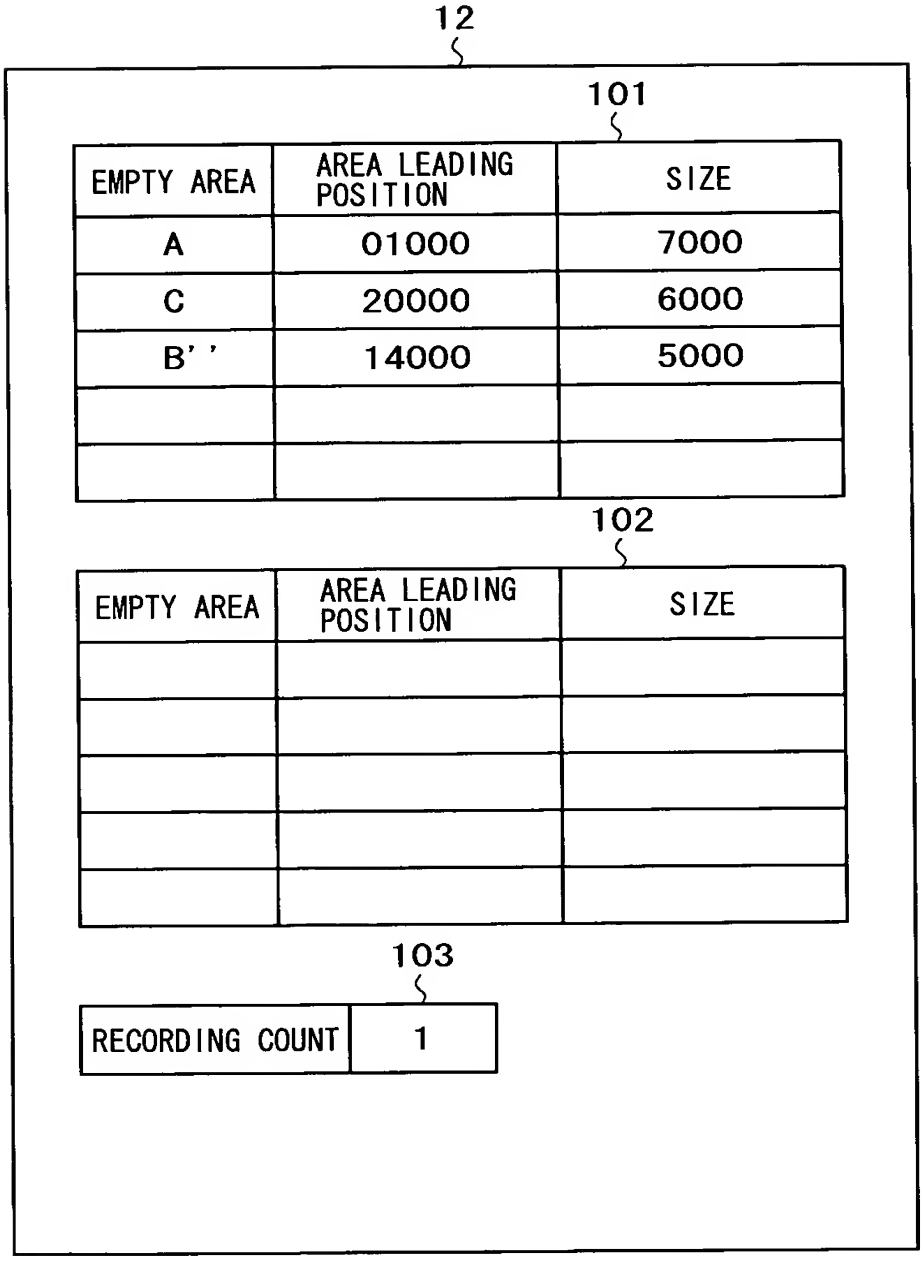

12
101
EMPTY AREA
AREA LEADING POSITION
SIZE
A
01000
7000
C
20000
6000
B''
14000
5000
102
EMPTY AREA
AREA LEADING POSITION
SIZE
103
RECORDING COUNT
1

FIG. 40

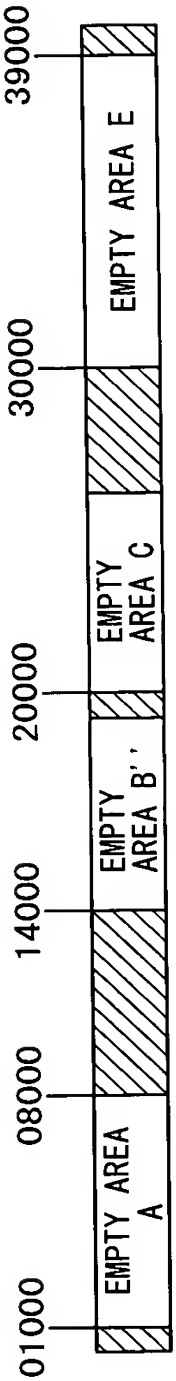

01000
08000
14000
20000
30000
39000
EMPTY AREA A
EMPTY AREA B''
EMPTY AREA C
EMPTY AREA E

FIG. 41

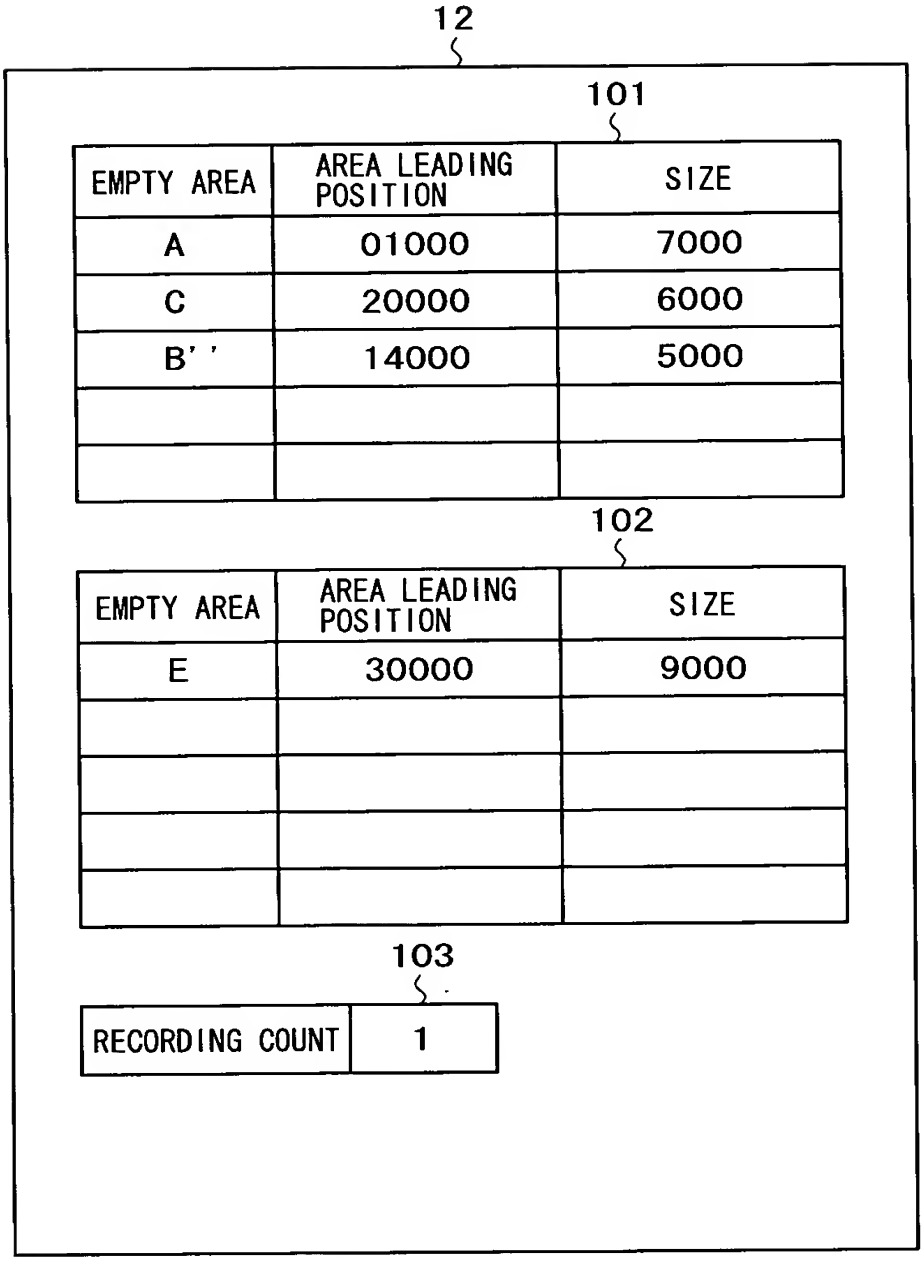
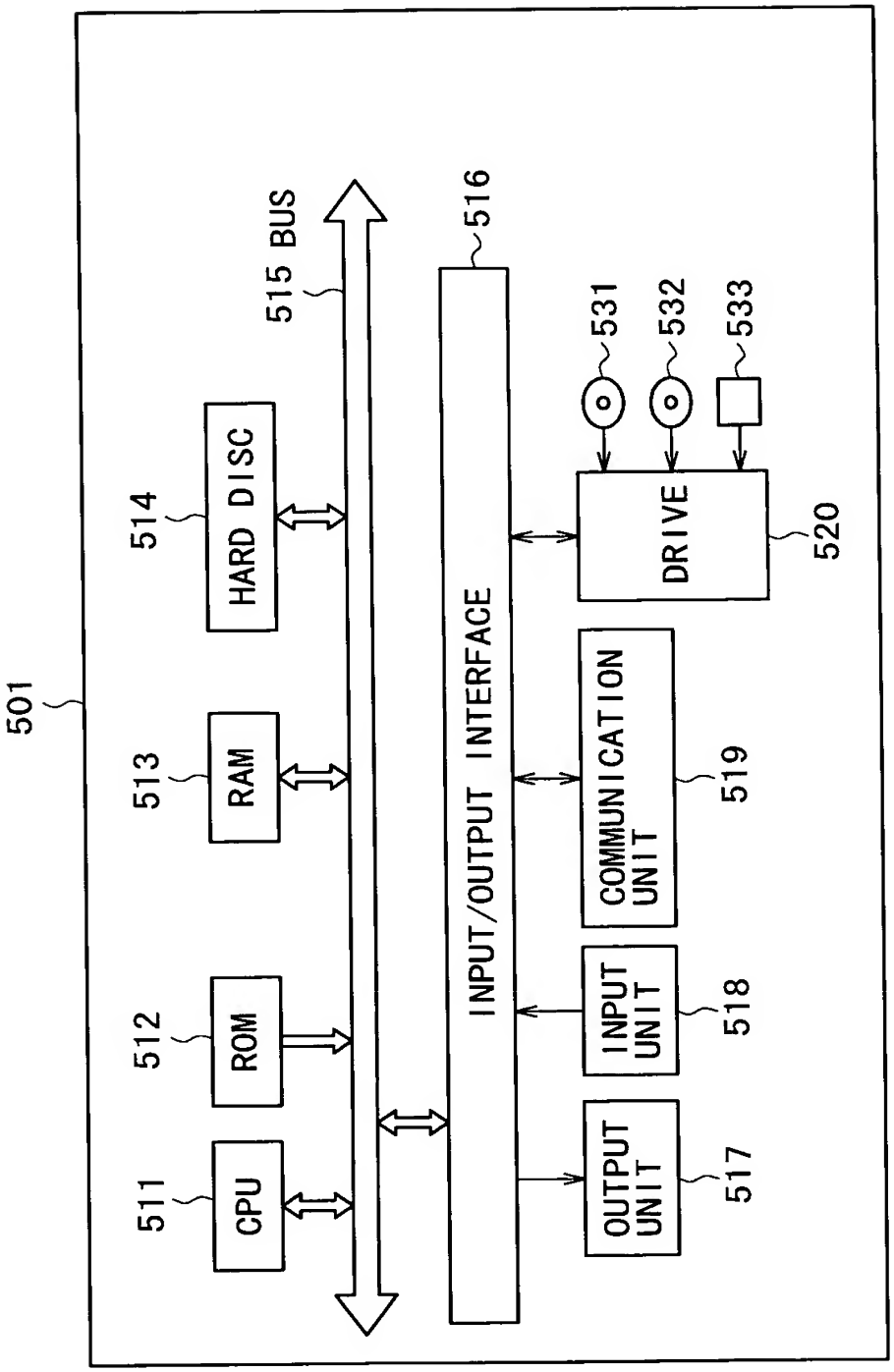

12
101
EMPTY AREA
AREA LEADING POSITION
SIZE
A
01000
7000
C
20000
6000
B''
14000
5000
102
EMPTY AREA
AREA LEADING POSITION
SIZE
E
30000
9000
103
RECORDING COUNT
1

FIG. 42


501
CPU
511
ROM
512
RAM
513
HARD DISC
514
515 BUS
516
INPUT/OUTPUT INTERFACE
OUTPUT UNIT
517
INPUT UNIT
518
COMMUNICATION UNIT
519
DRIVE
520
531
532
533